ENGINEERING NEWS-RECORD

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In a variety of corrosive highway services WROUGHT IRON provides longer life

The unprecedented traffic volume in recent years has made it imperative that materials used in highway construction provide long, uninterrupted service. Aware of this "durability-requirement," more and more highway officials and engineers are specifying wrought iron for corrosive highway services.

The selection of wrought iron products is supported by the material's proved record of durability in corrosive services. The photographs illustrate a few of the many corrosive highway applications in which wrought iron is providing extra "mileage" in the form of longer service life at lower cost per year.

We would like to send you our booklet, *Wrought Iron for Highway Construction*. It reviews these applications, and explains why wrought iron serves longer, saves more. Write for your copy.

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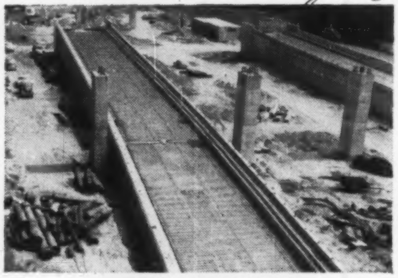
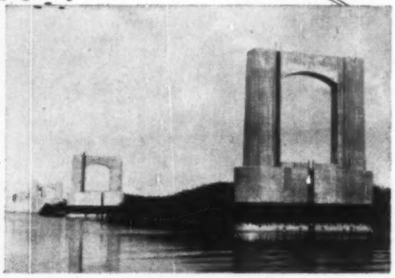
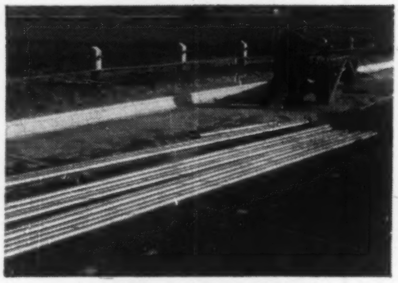


SNOW MELTING SYSTEM
Boston Aerial Highway

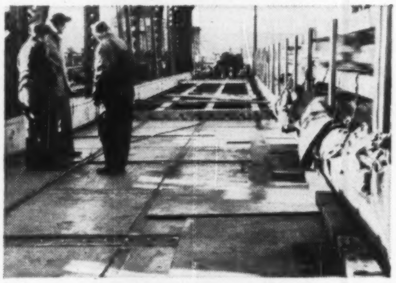


PROTECTIVE PLATES
State Highway Bridge over Illinois River

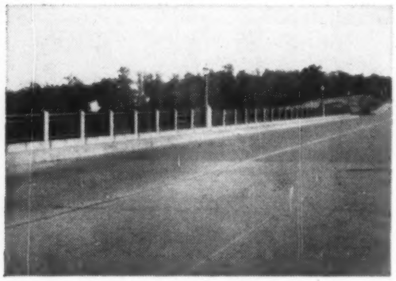


ELECTRICAL CONDUIT
Thomas A. Edison Memorial Bridge, N. J.

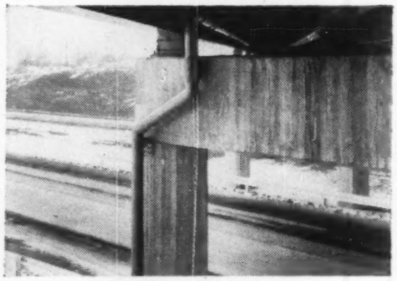
RADIANT HEATING IN TOLL HOUSES
Delaware River Bridge



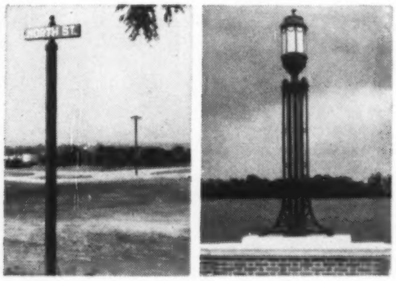
BRIDGE DECK PLATES
University Heights Bridge, New York



HAND RAILINGS
Ninth Street Bridge, Washington, D. C.



DRAINAGE LINES
Ohio Turnpike



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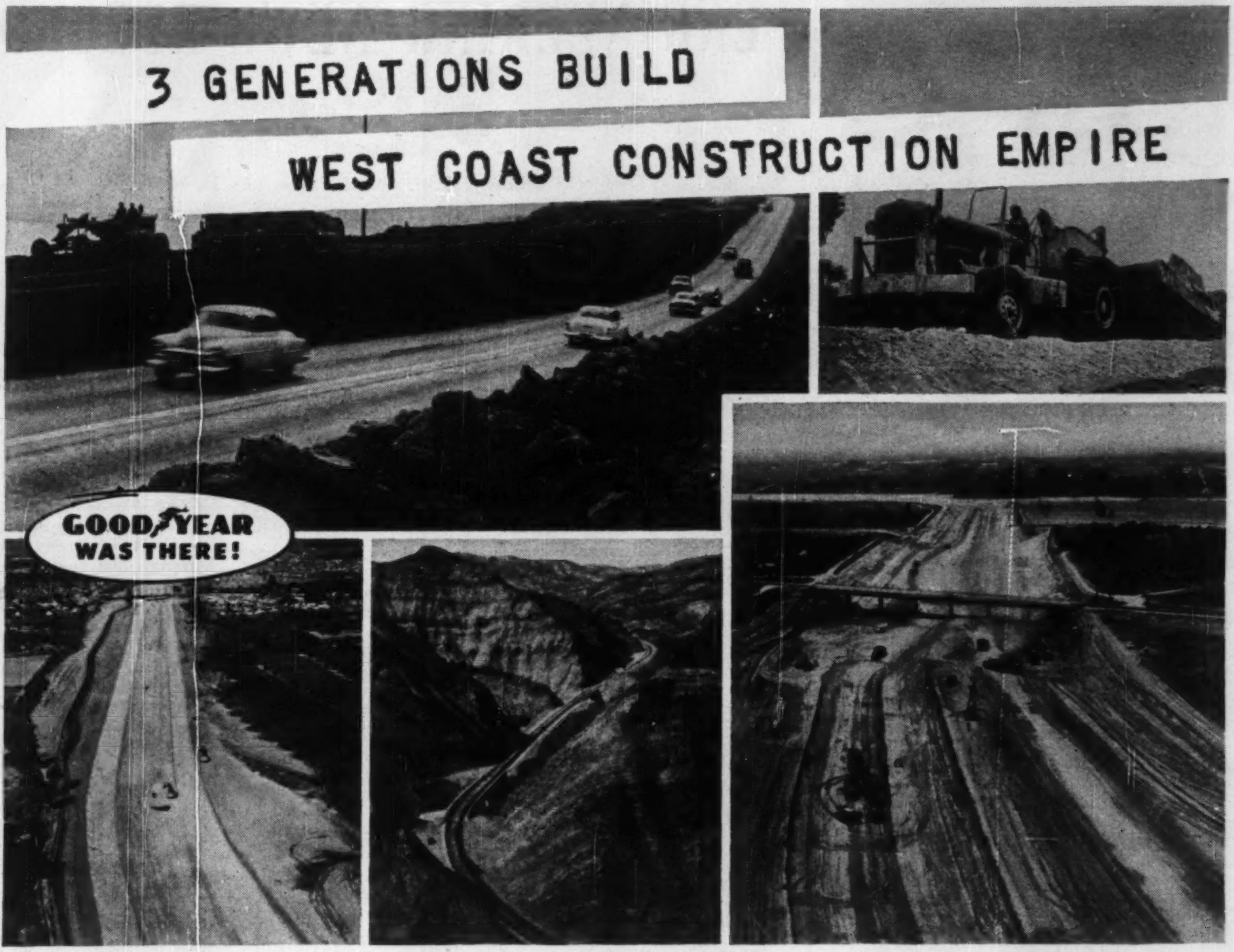

Starting 76 years ago, as a small contractor, Adolph Teichert built the versatile organization that has what it takes to lick the big ones pictured above. Today, when you see a giant West Coast job—quarrying, earth-moving, road, rail bed, military base or dam building—it's a fair bet that A. Teichert & Son, Inc., have a hand in it! Earthmover shown above has Goodyear Hard Rock Rib tires on front wheels, Hard Rock Lug on rear.

Longest-lived tires in any generation are built with 3-T NYLON CORD!

A GOODYEAR EXCLUSIVE, 3-T NYLON CORD can *obsolete* your present tire-cost calculations. It makes Goodyear tires so durable that bruise-breaks and heat-blowouts are close to the vanishing point. Ply separation and flex failure have also been virtually eliminated—keeping bodies in shape for many more re-lugs and recaps. In fact, 3-T NYLON CORD has ADDED so much to Goodyear tire life—and SUBTRACTED so much from operating costs—that it's simply good business to try Goodyear 3-T Nylons on your toughest operations!

Goodyear Truck Tire Dept., Akron 16, Ohio

FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE BUILT WITH 3-T NYLON CORD

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SURE-GRIP
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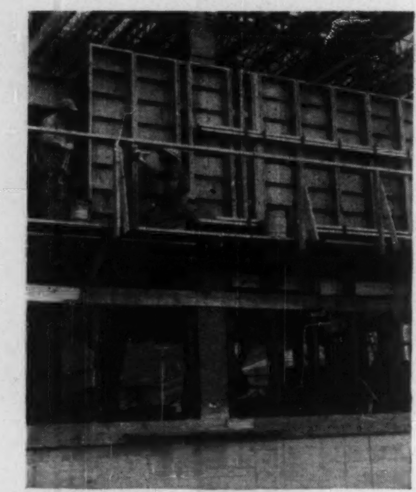

9,000 square feet of Symons Forms were re-used 12 times on this job. William Baumeister Construction Co., St. Paul, general contractor.

Spandrel Beam Forming Costs Cut ⅔ with Symons Forms

Because of the efficient combination of Symons forming, shoring and scaffolding methods, the contractor was able to cut his estimated cost by two-thirds on the $2,000,000 home office building of the Minnesota Mutual Life Insurance Company of St. Paul, Minnesota.

In addition to savings in labor cost, considerable time was saved in forming the Spandrel Beams of this 9-story building. The adaptability of Symons Shores with their safe "T" heads speeded the forming and scaffolding work. 2 x 8 ft. Symons Steel Rib Forms were used to frame 56,000 square feet of spandrel beams. Symons Shores were used throughout in beam construction. All foundation walls are 16 feet in height.

Symons Engineering Staff furnished complete form layouts and cost sheets for all the form work. This service was rendered at no charge to the contractor. In addition, Symons fieldmen gave regular on-the-job service.

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View of a spandrel beam after Symons Forms have been removed.

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Robert F. Boger

Publisher

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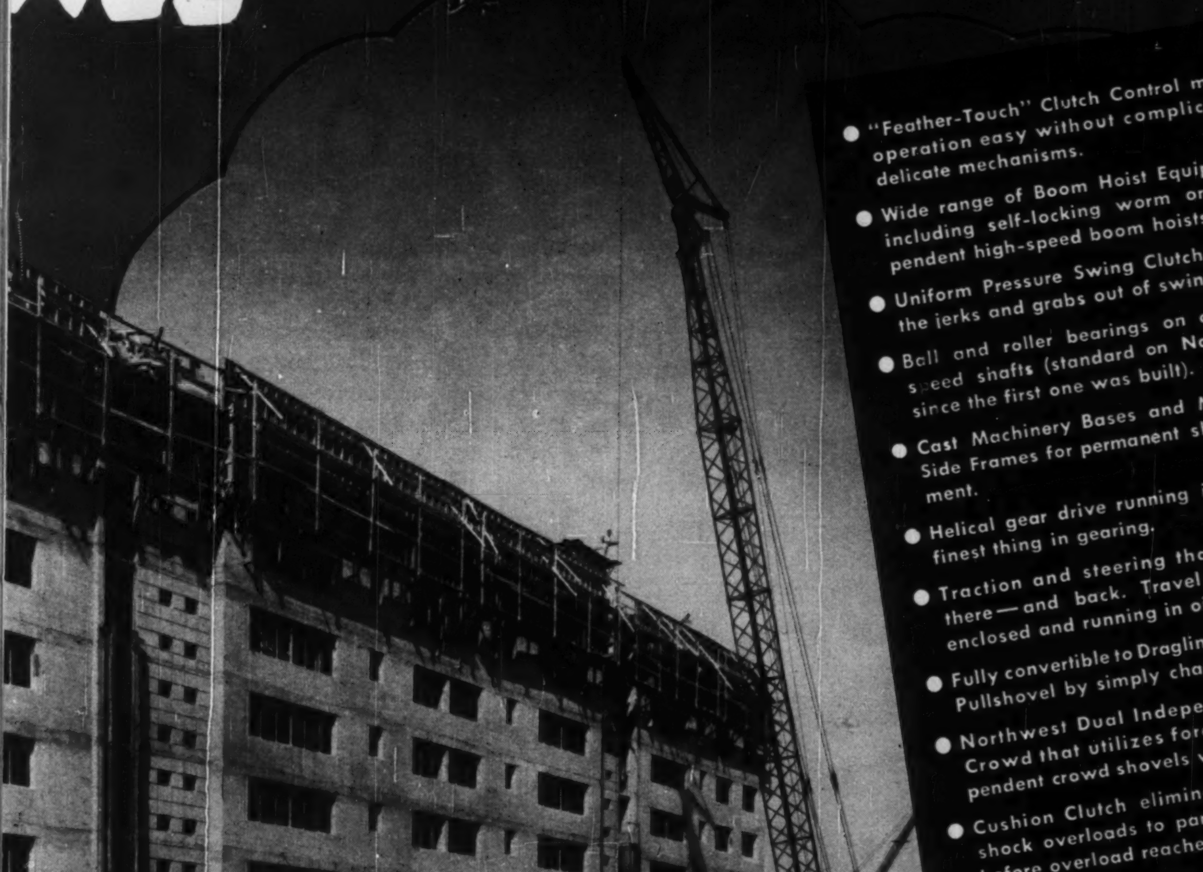

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Engineers
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Architect
L. Rossetti

WHEN I. B. M.'s new Kingston, New York, plant goes into operation next year thousands of gallons of chrome plating, cyanide and acid and alkali solutions will be piped through this three-barreled industrial waste line to a nearby treatment plant.

That's why new Amvit Jointed Vitrified Clay Pipe was used. It can take it!

The Amvit Joint is made of a new acid resistant plastic material with rubber characteristics dielectrically cast on the pipe. Like the pipe, the joints will not be harmed by any condition of underground service. And it's root proof.

Amvit Jointed Clay Sewer Pipe is just one of the many products manufactured in our plants across the nation. American Vitrified Products Company also produces concrete pipe, clay pipe, flue liners—both glazed and unglazed, and clay liner plates.

For more information, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

Photograph by Doug Campbell

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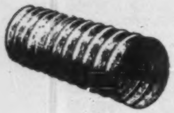

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Designed in accordance with specifications adopted by A. I. S. I. for light gauge structures, dated January, 1949.

TIMKEN® bearings cut lubrication checks from once a day to once a month

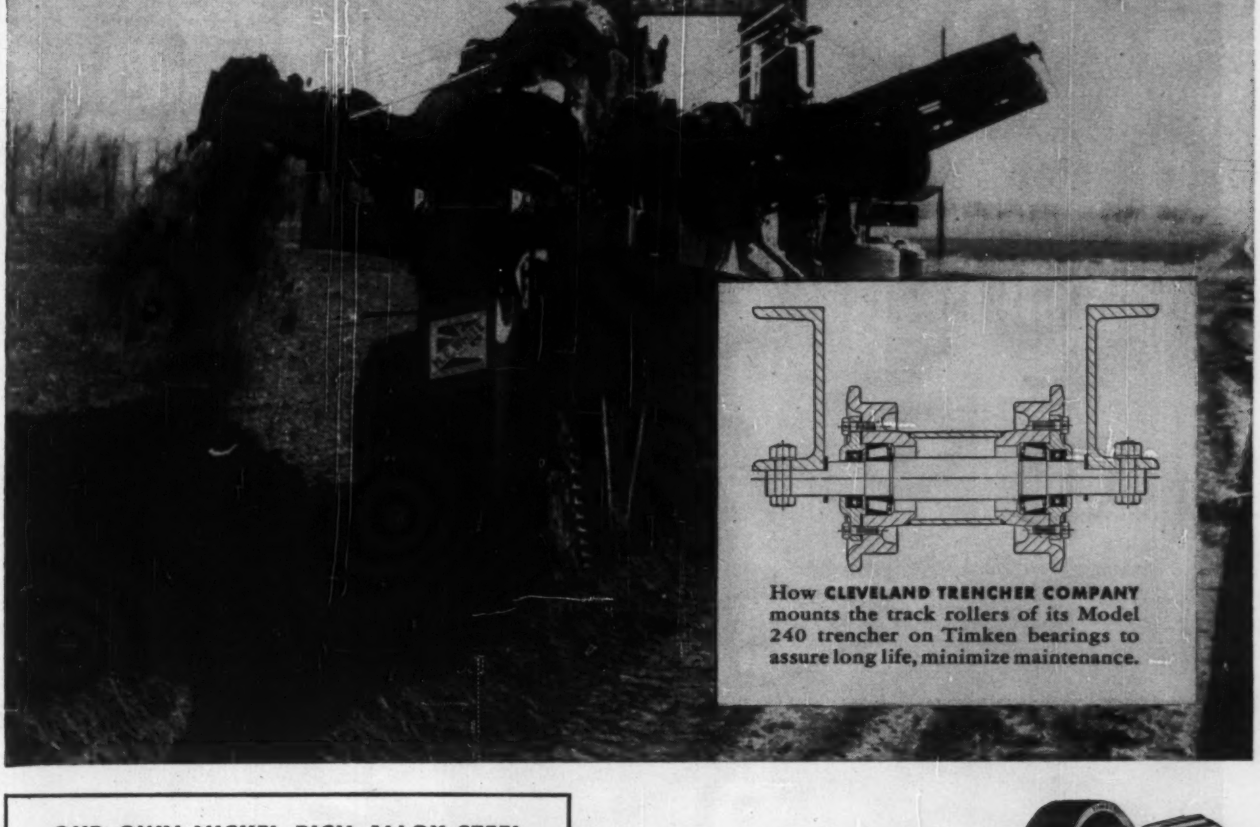
THIS Cleveland trencher's track rollers used to demand a daily oil check. Now, with Timken® bearings, one check a month is plenty. One reason: because of their high accuracy, Timken bearings keep housings and shafts concentric, allow the use of a more effective lubricant seal. The tapered construction of Timken bearings prevents end play in the track rollers, eliminates pumping action which would pull dirt in, force oil out.

Timken bearings practically eliminate friction in the trencher's rollers. Their geometrically correct design and precision manufacture give them a true rolling motion. They normally last the life of the machine because they're engineered for the job and made of Timken fine alloy steel.

This "240" model trencher can dig a ditch 3′ wide and 6′ 3″ deep at 12 lineal feet a minute along wet right-of-way or up sloping hills. To take the combined radial and thrust loads, 68 Timken bearings were specified for the crawlers, transmission and front upper truck. Because of their tapered design, Timken bearings take radial and thrust loads in any combination, hold shafts in rigid, positive alignment, assure smooth gear meshing under sudden starts and stops.

Always specify Timken tapered roller bearings when you buy or build machines. Look for the trade-mark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian office: St. Thomas, Ont. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best



How **CLEVELAND TRENCHER COMPANY** mounts the track rollers of its Model 240 trencher on Timken bearings to assure long life, minimize maintenance.

OUR OWN NICKEL-RICH ALLOY STEEL MAKES TIMKEN BEARINGS TOUGHER

Nickel makes steel tougher. And we don't skimp on nickel in the fine alloy steel we make for Timken bearings. Our steel-making specialists use the exact amount to give Timken bearings the toughness they need to withstand shock, last longer. We control the quality of Timken bearings at every step in production—from melt shop through final bearing inspection.

TIMKEN

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TAPERED ROLLER BEARINGS

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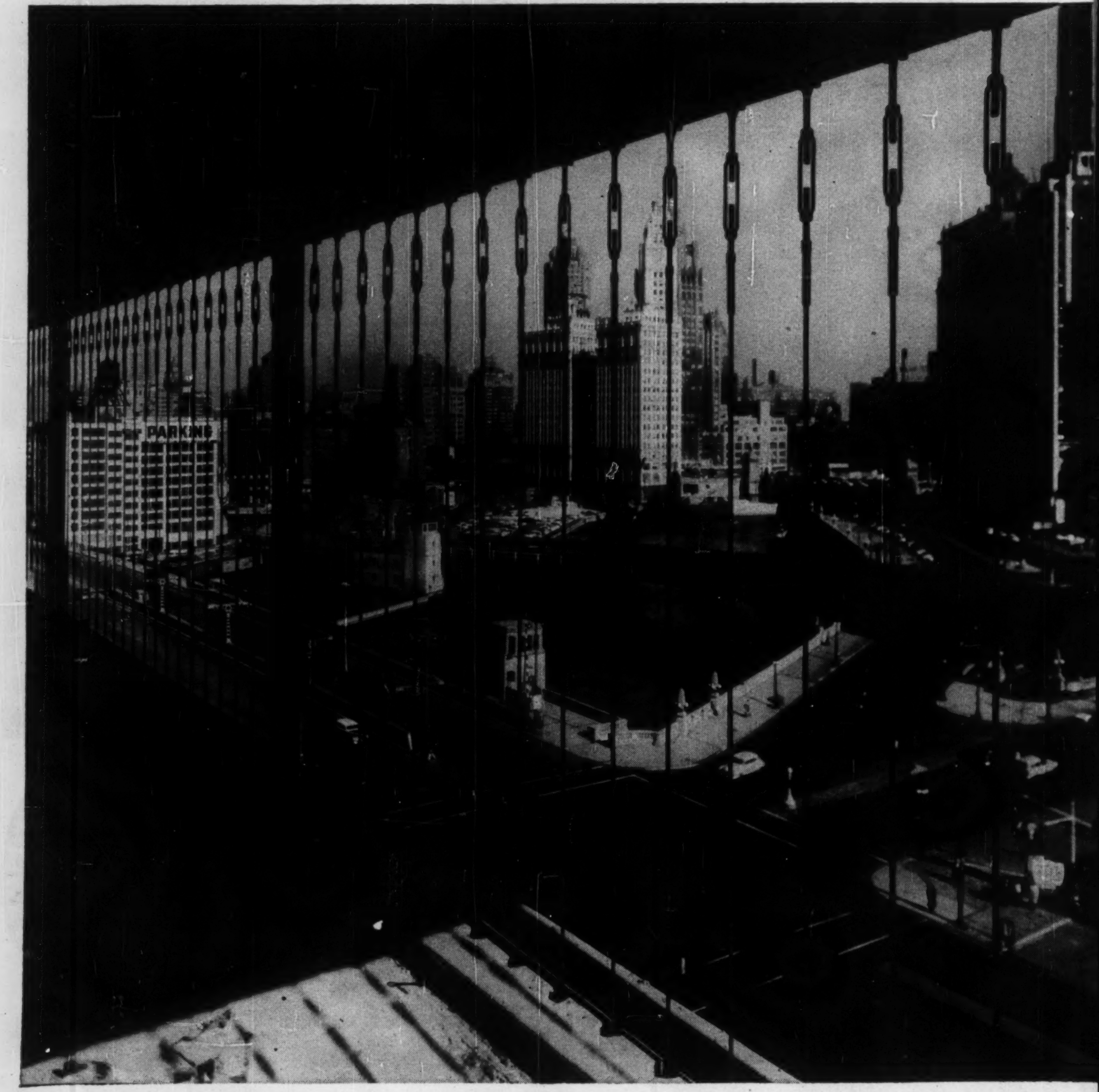
Shaw Metz & Dolio
General Contractor:
Herlihy Mid-Continent Company
Sub-contractor:
(Erection of cable assemblies)
Rippel Architectural Metals, Inc.

Peekaboo Wall. In Chicago's newest parking garage, the architects wanted a wall material that was both beautiful and functional, one that would stay that way for years without maintenance. They took off into the blue and designed themselves a unique *wall of strand*—Tiger Brand *Stainless Steel* Strand. This stainless steel strand makes a striking appearance, resists torsion, and was easy to install. American Quality Springs provide the tension (1,000 pounds) to keep the strand taut and straight.



RIGHT Rope for these jobs...

Pre-fab Steeple.

It would have been costly and time consuming to erect this steeple piece by piece at the site. So it was pre-assembled, then lifted into place with a mobile crane. This was no easy lift—if you doubt it, try dangling a 5-ton *church steeple* on the end of a 100-ft. boom sometime and see how it acts. In this case, the operator made the lift quickly and with no trouble. He could count on the strength of a ¾" Tiger Brand Hoisting Rope for safety. The smooth spooling of this rope helped him maneuver the spire into position.

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READER COMMENT

Erosion at Bonneville Dam

SIR: I was very much interested in the picture which appeared on page 37 of the April 21 issue showing effect of erosion on concrete baffles of the Bonneville Dam. I believe the erosion was due to cavitation, which appears to be somewhat prevalent in some of the details of dams and spillways.

The effect of cavitation seems to give considerable maintenance which perhaps could be reduced substantially if designers of dams would consider using granite facing wherever erosion of that sort is anticipated. In bridge construction many bridge engineers have practically eliminated erosion of concrete piers at the water line by granite facing the outside surfaces of the piers. Of course the erosion on a bridge pier is of different type than that in the baffles of a dam; however, granite facing has been most effective in checking erosion of bridge piers.

G. I. SAWYER,
Chief, Planning, Design & Engineering, Department of Highways, District of Columbia.

Not So "Advantageously Dry"

SIR: In ENR May 19, p 65, you set forth an article entitled "One-Time Construction Engineer Tightens City Public Works Management." In that article you refer to our corporation and you state in reference to one of our contracts: "The contractor on this work . . . won the job for $2,738,000 after having been given access to a geologic report made for the city years back indicating water would be a problem in the area. This report was in error; the digging has been advantageously dry; the contractor has about completed a very smooth job of construction."

The facts as stated by you are entirely untrue, misleading, and recklessly made without proper investigation. First of all that geologic report was not made "years back" for that report is dated March 9, 1953, and our contract is dated June 18, 1953. It was only 3 months old when we bid for this work.

Secondly, you should have had full knowledge of the fact that water was a major problem in this area. In Engineering News-Record of December 9, 1954, p 6, is published an advertisement of Griffin Wellpoint Corp. stating that on the intercepting sewer in Staten Island where we were the contractor a wellpoint system had to pump 20 mgd to keep the subgrade dry; that the center line of this excavation was less than 300 ft from the Atlantic Ocean; and that the outlook for excavating 28 ft below the surface was "not exactly rose-colored."

The geologic report which you refer to definitely indicated that water would be encountered. We knew water would be encountred and we took steps, with wellpoints, to lower 28 ft of ground water in the 30-ft cut for our sewer.

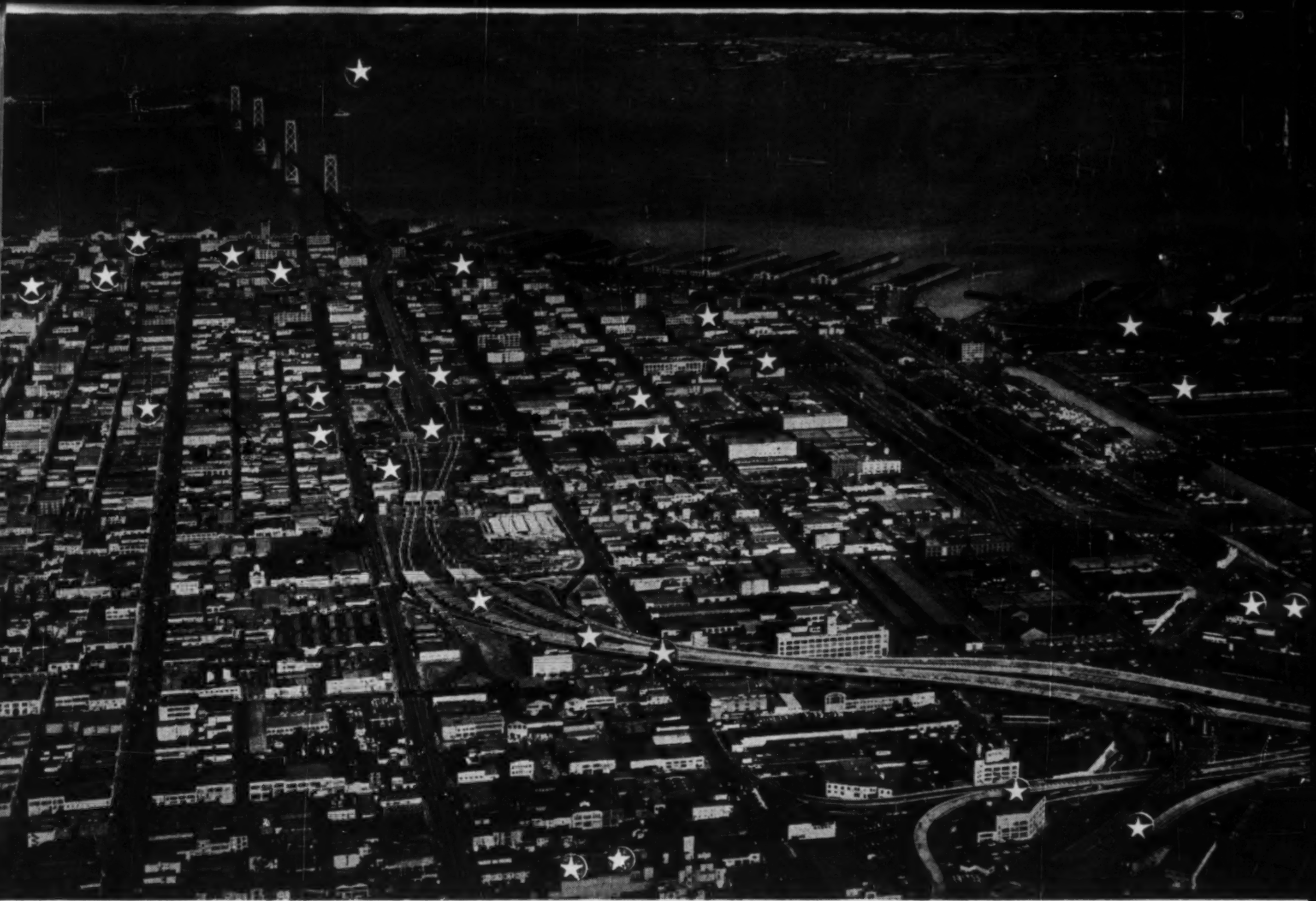
In addition to use of the wellpoint system there were many places where wellpoints could not be used, and we had to use other and different kinds of pumping equipment to keep the trenches dry.

The subsurface conditions were no different than any contemplated; subsurface conditions which we encountered were anticipated by us.

You have failed in your article to quote a significant sentence of Article 4B that "The attention of the commissioner must be called immediately to such conditions before they are disturbed. The commissioner shall thereupon promptly investigate the conditions." Although we proceeded with our work to the entire satisfaction of the Department of Public Works and we had maintained a rate of progress which astounded the city's engineers, it was not until after a great portion of our work had been completed that for the first time the commisisoner decided he should make an attempt to invoke Article 4B by writing a letter to us saying that "it appears that the sub-surface conditions encountered by you at the site . . . differ materially from any shown on the plans or indicated in the specifications or those which reasonably could have been anticipated."

It is quite evident that a geologist had intended to direct the contractor as to the methods the contractor was to employ in order to perform his work, and it is in this regard that the commissioner was led far afield. A geologist should stick to his own business and leave the contractor to pursue his own methods to attain the required results, so long as those methods are not specifically set forth in the specifications.

For your information, the commissioner has arbitrarily withheld our partial payment No. 18 which was due us on April 1, 1955, as well as our final payment. Furthermore, the commissioner has demanded that we permit his accountants to examine our books to see if we made a profit



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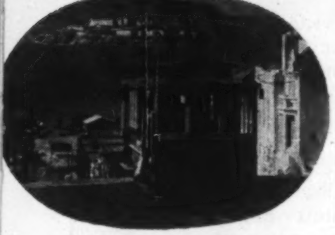

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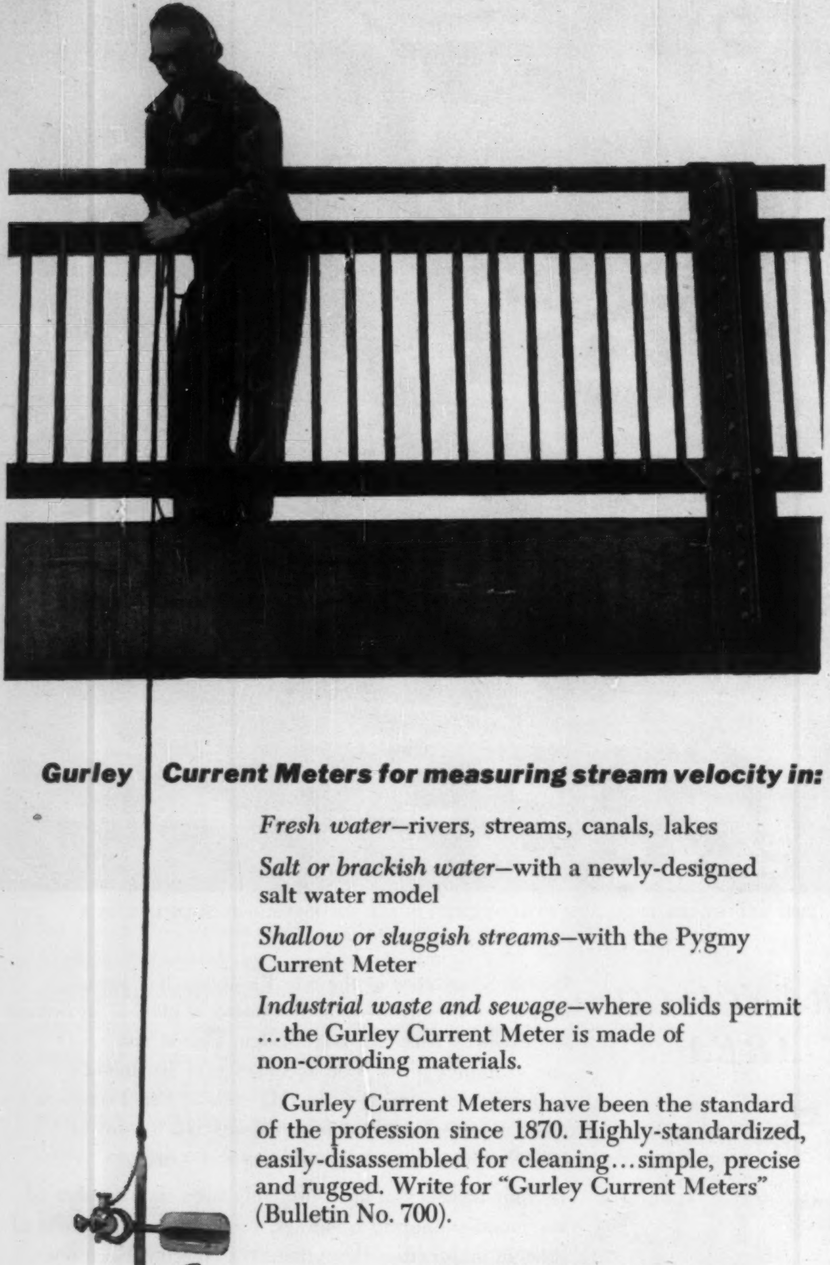

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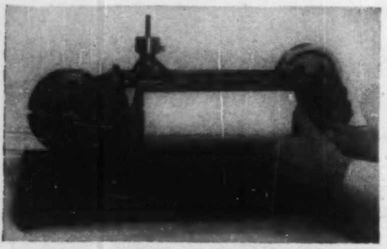

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READER COMMENT

on this job, although there is no provision in the city contract therefor. In addition he wants to look at our estimate sheets which we prepared in submitting our bid. Can you imagine a contractor making public his estimate sheets on which he bases his bid, so that his competitors will know how he bids for particular work? This, it seems to us, is very unusual.

Frank P. DiMenna,
Secretary,
Nicholas DiMenna & Sons, Inc.
New York, N. Y.

[Editor's Note—The above letter is welcomed as opportunity to correct any conveyed impression that the work involved was done without any dewatering. It also provides occasion to state that borings for the Queens sewer tunnel referred to in this story did not indicate work would be totally in rock.]

Errors in Legal Notes

Sir: There are some errors in the summary of the court decision in a suit brought by our firm as reported under "Architect's Compensation" on p. 100 of the June 2 issue of Engineering News-Record.

The $1,500 on account was the normal 10% retainer of the total contract. The $3,000 was the additional payment due on completion of preliminary plans, not on completion of all plans, as stated. Also, the court action was brought to recover the $3,000 due on completion of those preliminaries.

Incidentally, both the lower court and the State Supreme Court of Errors ordered payment of the $3,000 plus 6% from date of billing.

Walter J. Douglas
West Hartford, Conn.

CALENDAR

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26-July 1.

Society of American Military Engineers, Western Regional Convention, Olympic Hotel, Seattle, Wash., Aug. 18-20.

Pennsylvania Sewage and Industrial Wastes Association, annual conference, Pennsylvania State College, Aug. 22-24.

International Association for Hydraulic Research, 6th Plenary meeting, Delft, Netherlands, Aug. 29-Sept. 2.

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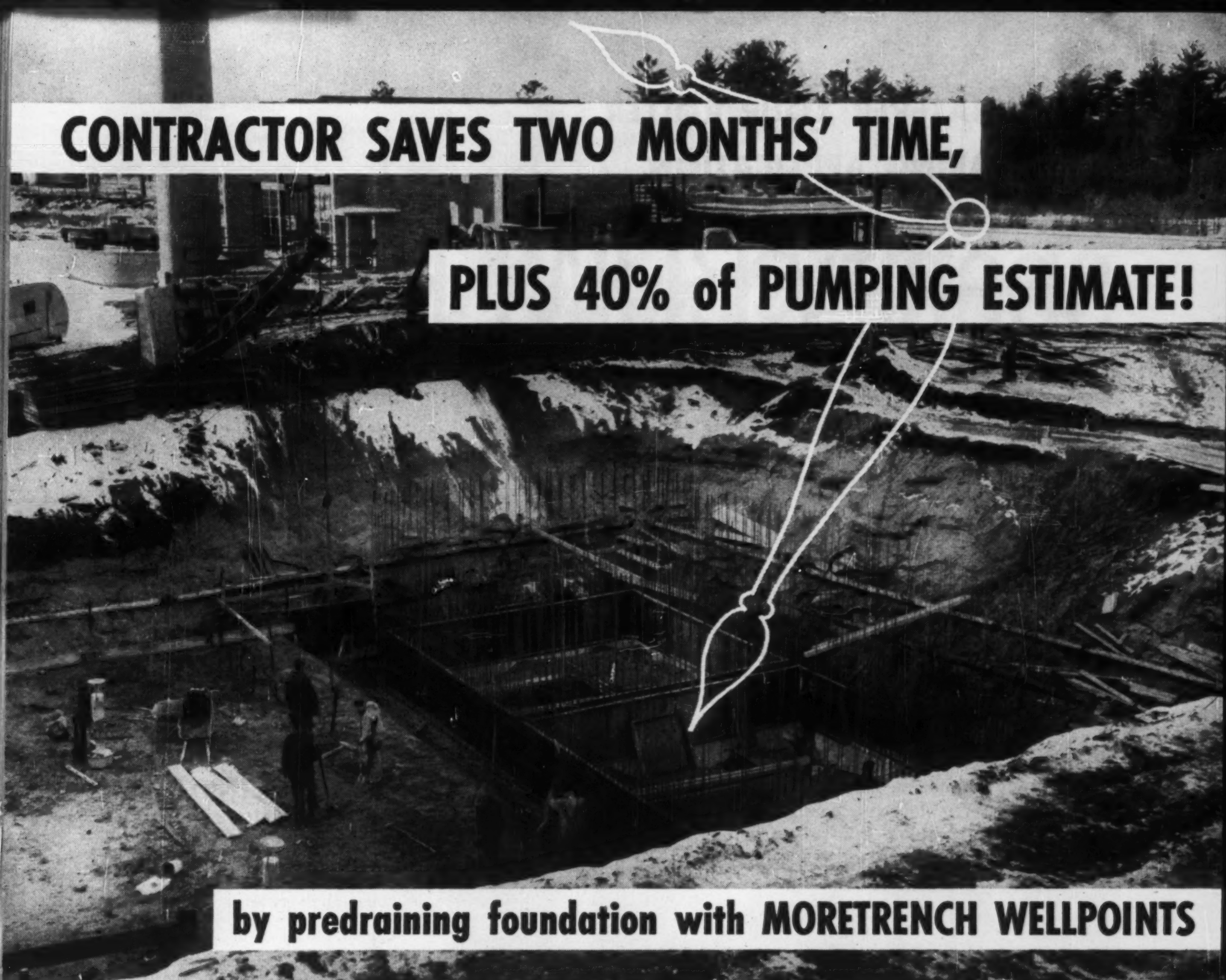

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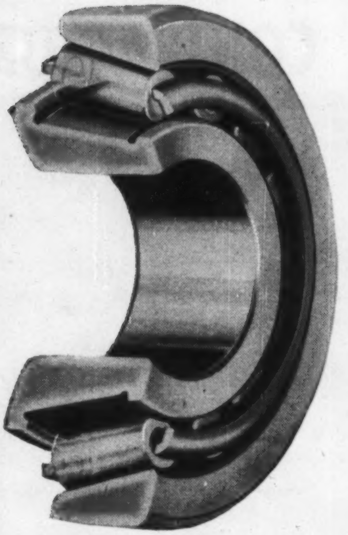

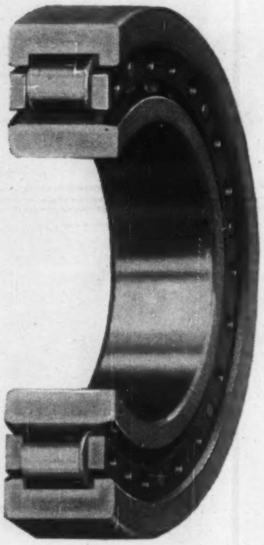

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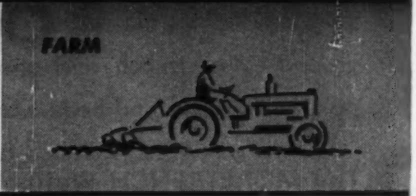

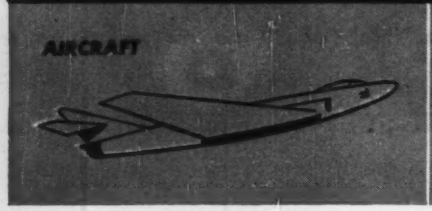

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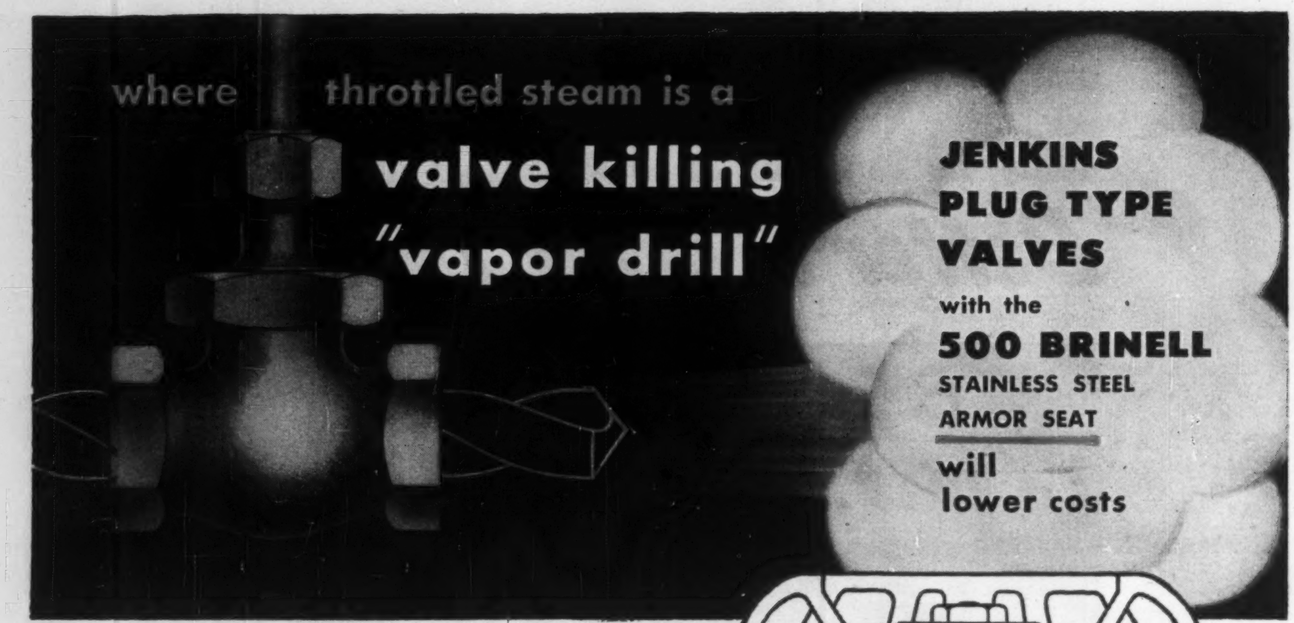

Closely regulated steam erodes grooves in seating units and drastically cuts service life of ordinary valves.

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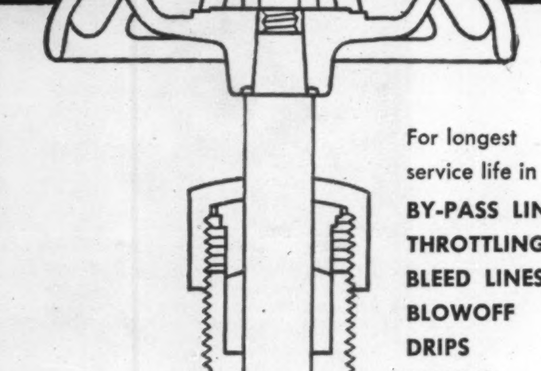

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

FASTER RIGHT-OF-WAY ACQUISITION—A new Washington State law, providing for blanket condemnation suits to expedite acquisition of highway right-of-way, will get its first court test July 12.

The measure permits the state to file a single action against several pieces of property, prior to opening negotiations with the individual owners. Trials for damages will follow in instances where no agreement can be reached on price.

Enactment of the law by this year's legislative session was in response to a State Supreme Court ruling, which held that condemnation proceedings could not be initiated until an offer had been made to the landowner and refused. The court also ruled that separate condemnation actions were necessary.

Involved in the first blanket suit are 81 pieces of property on the route of the 10-mile Spokane Valley Freeway project. A second suit in preparation will involve 212 homes and two churches.

STIFFER PENALTIES—California's division of architecture has stiffer penalties for failure to complete state contracts on schedule. A standard $50 a day in liquidated damages has been replaced by this scale:

$50 a day on contracts from $2,000 up to $50,000; $100 on jobs up to $250,000; $150 on projects up to $500,000; $200 on contracts up to $1 million; and $250 on those over $1 million.

TV TRAFFIC CONTROL?—Detroit officials are considering use of closed circuit TV for locating traffic snarls and spotting violations on the city's expressways. They recently gave the system a test, televising the scene just south of the Lodge-Ford expressway interchange and at a particularly busy intersection on the Ford expressway.

Among the suggested uses are warning police when and where to intercept traffic tie ups; helping traffic controllers signal motorists (by means of electronically controlled signs); ticketing traffic violators by mail; and for use on programs on TV home shows.

'AFTER YEARS OF NEGLECT'—The Florida State Highway Department was described as "a Chinese army" in legislative proceedings that culminated in a law requiring its reorganization.

The description must seem apt to Chairman Wilbur Jones and personnel director Frank Giles as they attempt to re-classify some 5,000 employes. For, says Jones, "our present system of hiring and paying employes is a hodge podge, an accumulation of years of neglect." He said files for years back show that certain employes have been raised as much as $50 a month "for no other reason than the governor ordered it." Persons found unqualified for the jobs they now hold are to be given six months to learn the work or shifted to some other job.

Chosen in the West. "Century" Pipe is shown as it is installed at Lake Almanor, Calif. The piping will be a part of the water system at Lake Almanor Country Club Estates.

Chosen in the East. This photograph shows "Century" Pipe being laid in the hard, rock-filled soil of New England near South Hadley Falls, Mass. Today, more and more value-conscious communities are specifying this durable, long-lasting pipe.

13 miles of long-lasting pipe! Pictured here is part of a 13-mile installation of "Century" Pipe at the Lakewood Water District near Tacoma, Washington. Made of two practically indestructible materials, asbestos and cement, "Century" Pipe assures *extra* years of low-cost service.

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WASHINGTON OBSERVER

The significance of the two big reports this week on natural resources is this:

The Hoover Commission softened materially the findings of its task force. Adm. Ben Morreell's group wanted the federal government to get out of power development—lock, stock and barrel. The full commission took a middle-ground view, stressing primarily the kind of partnership that the Eisenhower Administration is pushing (see page 25).

The Presidential commission on federal, state, local relationships underwrites the Administration, as well. This commission was taken over by Meyer Kestnbaum after Eisenhower dismissed Dean Clarence Manion because the Notre Dame professor was out of step with the Administration. It acknowledges that some federal activity in the social area is sound, and criticizes the states and localities for failure to assume their responsibilities, thus opening the field for federal programs.

So the findings on what Washington should do are temperate. They go a long way toward knocking down the political arguments that the federal government should get out of dam building, airport, hospital and school construction, and similar grant-in-aid programs. Rather, both reports endorse Eisenhower's policy of helping with federal money, but demanding more local participation.

•

Consulting engineers should watch a new tax proposal in Congress. The Ways and Means Committee is considering whether to give such professionals a tax break on money they invest in their own retirement trust funds. The idea: A lot of professional people and self-employed people are not covered by corporation retirement systems, and so should be given a tax benefit on the money they pay into their own plans. The proposed limitation: Payments of $7,500 a year or 10% of annual income, whichever is larger. Taxes finally would be paid, under the capital gain ceiling of 25%, once a man retires.

Treasury Department is against the program—for the time being. Secretary of Treasury Humphrey says he can't stand the loss of revenue. Past administrations have been opposed, on similar grounds. But the idea has enough appeal that Democrats are proposing it. It will come up again, if defeated now.

•

Construction of more electric power facilities is badly needed. That seems to be the upshot of an inter-agency squabble revolving around the question: "How much electric power should we have to prepare adequately for an all-out attack on this country?"

Interior experts say we'd have enough for the first 12 months—but only because delays in re-tooling plants would soften the surge of demand for power. More construction still is needed.

Nationally, reserve power capacity will be only 9.8% by 1958 according to Federal Power Commission—and the margin for safety, even in normal times, is figured at a reserve of 15% over and above "normal" demand. This would take care of emergencies, peak loads, and the like.

In key areas, the margin will be almost nil by 1958. The Southeast reserve three years from now will be less than 1%; Northwest reserve will have a "negative reserve"—an actual shortage of 1.3%.

Regional shortages are important officials note, since you can't shunt a surplus from, say, New England to supply needs of the Northwest if a water shortage produces a power shortage there.

A government finding on power needs is in the works. National Security Council asked Office of Defense Mobilization, which turned the job over to Dept. of Interior. Such a study of wartime needs hasn't yet been made.

Previous government findings on power needs have been 'way off. Back during the Korean conflict, one was made which was about one-third off base.

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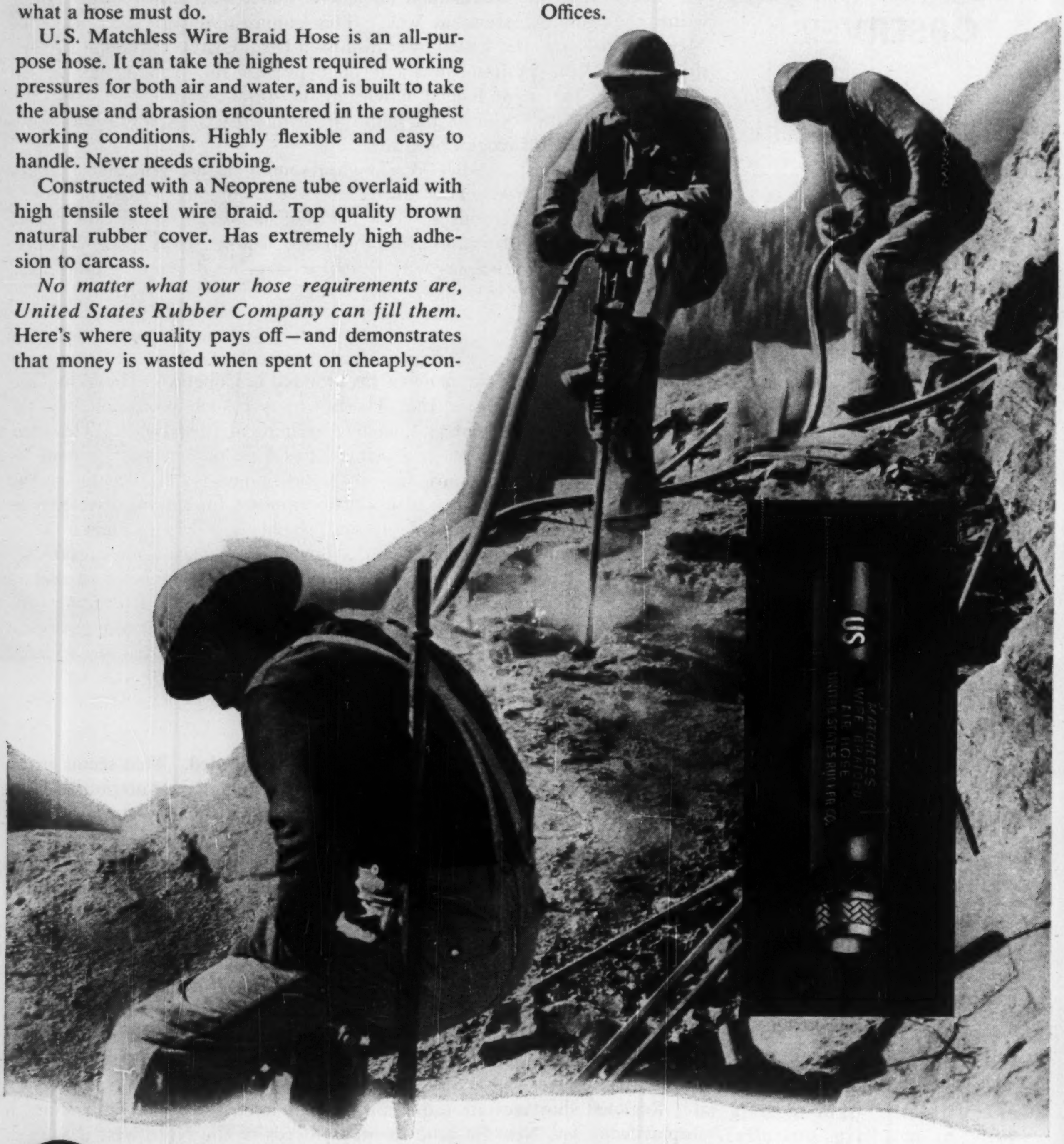

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JUNE 30, 1955

ENGINEERING
NEWS-RECORD

As Boom Goes On:

Anxiety Over Materials Shortage Grows

ENR Staff Report

The construction boom is putting a heavy strain on supplies of materials and piling up a backlog of equipment orders.

There's little evidence that shortages have become critical enough to halt construction, although tight supplies are probably upsetting work schedules already. Certainly the supply is posing these risks for bidders:

- Possibility of missing performance deadlines.
- Danger of getting caught by rising prices—partly a by-product of the tight supply situation (ENR May 19, p. 21). Also, there is the likelihood of having to pay premium prices to get certain materials from outside normal supply areas.

Manufacturers and dealers are attempting to hold the fort by allocating short-supply items. However, this stopgap can't be expected to keep some items out of the "critical shortage" column during the peak of July and August. And, in fact, according to reports from some areas, simple prorating of supplies on the basis of last year's purchases quite often complicates the problem.

• **Cement and steel**—Reports of current and pending cement shortages have become commonplace (ENR June 9, p. 24), despite the fact that shipments increased 10% for a record high in the first four months of this year. Apparently it will continue to be touch and go on cement for the rest of the summer, despite some help from imports and part of the scheduled expansion of productive capacity.

A widening gap has developed between steel bookings and shipments (see chart). May bookings released by AISC as we go to press shot up to 304,498 tons, the highest for any month since May 1953. For the first five months of this year, bookings totaled 1,335,416 tons, up 31% for the same period of 1954 to the highest five-month total since 1951.

In contrast, shipments continued to lag behind last year. May shipments were down to 222,182 tons—12% under May of last year and lowest for the month since 1950. For the first five months, shipments are down 15% from the same period in 1954 to 1,132,523 tons. This is also 15% below total bookings so far this year.

Backlog of orders for fabricated structural steel stands at nearly 1,600,000 tons, compared with a backlog of 1,300,000 tons at the turn of the year.

The construction industry's unprecedented demand for steel is competing with a similar heavy demand by the manufacturing industries, notably autos and construction equipment. Consequently, production of structurals is taking a cutback.

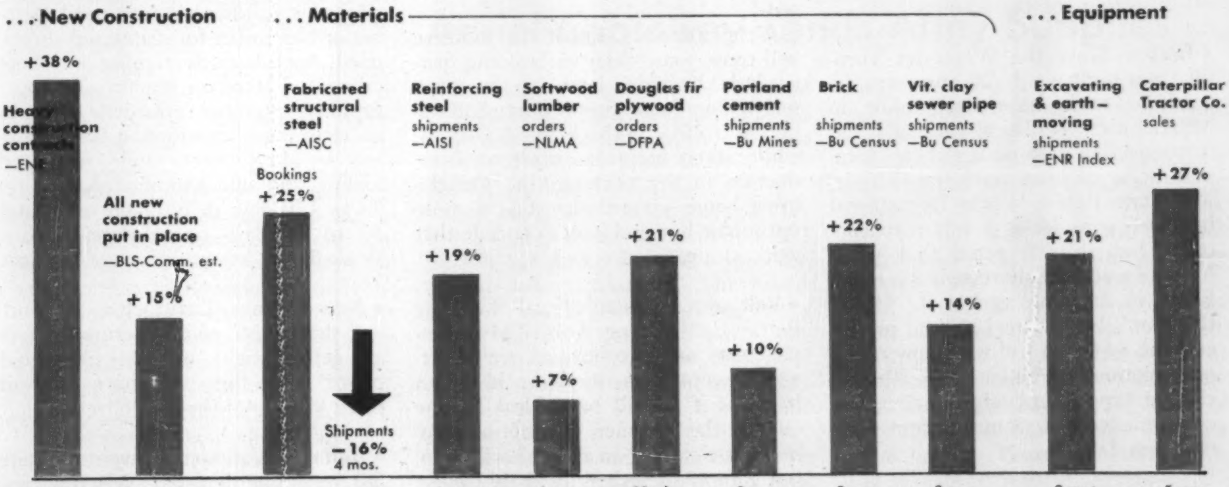
• **Big equipment market**—In contrast to the early 1954 slump, demand for heavy construction equipment is up sharply so far this year. For example, first quarter shipments of excavating and earthmoving equipment are ahead 21%. Caterpillar Tractor Co. sales in the first five months are up 27% over the same period in 1954.

This better-than-anticipated demand has caught manufacturers and dealers with insufficient inventory in many cases. Although plants are working overtime to fill orders—some working three shifts—deliveries are falling behind. Furthermore, model changes have prevented some equipment makers from getting off to a better production start this year.

• **Other materials**—Lumber and plywood are expected to be in tight supply for the rest of the summer. For the boxcar shortage that has been forcing cutbacks in shipments from the Pacific Northwest (ENR June 23, p. 76) is expected to persist until fall.

Suppliers in most parts of the country seem to feel that they can get the construction industry over the lumber hurdle. But, they are emphasising the distribution difficulties and

Per cent change 1954-55 in demand for . . .



. . . Materials shortage grows

expecting lumber price increases to continue.

The shortage of gypsum products, particularly wallboard and lath, is virtually nationwide. Allocations and priority to regular customers have become standard trade practices for some time.

Certain types of brick are in short supply in scattered areas, also glazed tile. Rapid growth of residential tracts is straining available sewer pipe supplies in some areas but no serious bottlenecks have been reported.

From a spot check of the supply situation in major cities across the nation by ENR correspondents, here are a few examples of the concern being felt by suppliers and contractors over cement, steel and equipment:

• Cement

Right now the country's most critical cement shortage is in the Dallas area. Julian Capers, Jr., managing director of the Dallas Chapter, Associated General Contractors, says the Dallas cement shortage is the worst in the city's history, including the period during and immediately after World War II.

While cement is selling for 90 cents a sack through normal channels, it is bringing as high as $1.65 on the "gray market."

Dallas is in the midst of a construction boom that has exceeded highest expectations. Unusually mild and dry weather kept winter-time construction activity at a high level, preventing accumulation of a normal cement backlog. And, complicating matters still further, a plant breakdown early in the spring resulted in loss of about eight weeks' production.

Here's how the problem looks in other sections of the country:

• **Boston**—Since the Worcester Turnpike was built nearly 20 years ago, no concrete roads have been built in Massachusetts—political irregularities in connection with paving of this turnpike being at least partly responsible. The State Public Works Department has been considering a return to concrete, but it is reported that possibility of a cement shortage was a major factor in deciding against it. Hence the state's big Route 128 road project and the east-west toll road now under construction will be blacktop. Though cement supply for bridge work is adequate, delivery is requiring more time than usual.

• **Des Moines**—Iowa has no current cement shortage, but a real pinch is expected in the near future. Gov. Leo Hoegh, who has proposed widening 500 mi of highway this year, recently called attention to the prospective shortage remarking: "There is no cement shortage yet (mid-June). If there is one, we can use bituminous asphalt instead." The Iowa Highway Commission has reported supplies adequate through June contract lettings but couldn't guarantee what they'd be like the rest of the summer. On the other hand, the Iowa Good Roads Assn. last week told the governor it had surveyed the supply situation and was assured there will be plenty of cement for the state's highway widening project.

• **Indianapolis**—Shortages of cement for the northern Indiana toll road have been reported from time to time but contractors have not officially notified the Indiana Toll Road Commission of handicaps on this score. Tonn & Blank, Inc., contractors for a new administration building and chapel at Bunker Hill Air Force Base near Peru, report that a cement shortage is slowing up work at the base. The firm is forced to buy its cement from a plant at Hannibal, Mo., instead of its usual supplier in Lake County, Ind., because all the output from this plant is going to the turnpike.

• **Los Angeles**—Inadequate cement supply is the most pressing materials problem for heavy industry in southern California. Excessive demands for highway work, flood control projects, military allocations, plus the continuing boom in housing, have left cement in short supply. (A cement company official estimated that flood control and the military each account for about 20% of the total cement output.)

General feeling is that the shortage will cause some delay in building, particularly housing, later in the summer. One large supply company reported a 30% cutback in allocations, while others are anticipating some reduction in the next month. On the other hand, some dealers take a more optimistic line and won't concede that work stoppages are in the offing.

• **Baltimore**—Says an official of a large Baltimore building firm: "My company has not encountered any shortages except cement, but this item looks as if it will be critical by the end of the summer. European shipments are coming in and this will help, but supply definitely will be worse than in recent summers. The Maryland roads program is having some effect, but the high level of private construction is a bigger factor."

• **Cleveland**—With the Ohio Turnpike scheduled to open in October, the supply situation will be eased later in the summer. Meanwhile, builders in the Cleveland area have been able to get cement for local projects, but deliveries have been uncertain and in some cases they've had to pay premium prices.

As last year, shipments from Canada have helped to some extent. One Great Lakes shipper recently had arranged sale of 2,800 tons of bag cement even before he placed the order in Montreal. He was able to unload the entire shipment directly into customers' trucks upon its arrival, saving cost of warehousing and delivery.

• Steel

Here are a few of the signposts in the tightening steel situation:

• **Cleveland**—"Despite the fact that mills have been operating at more than 100% of rated capacity for the last few weeks, deliveries for fabricated building steel have increased from two months to as much as six months," according to a spokesman for H. K. Ferguson Co. "Standard mill steel now requires 120 days before shipment and related items also are affected."

• **Baltimore**—"There definitely are shortages in the general steel line," says a Baltimore supplier. "People who ordinarily are mill buyers are drawing on the warehouse to such an extent that warehouse inventories are at low ebb for many items. Shortages cover the entire line of construction steel, especially structurals and plates."

• **San Francisco**—Contractors ordering steel now will have to wait until October or November for plates and sheets, until August or September on sheet piling and standard structurals. Some suppliers promise immediate delivery on steel mesh, reinforcing bars, stainless building sheets and corrugated roofing, but one manufacturer quotes 90 to 120 days delivery on mesh and 40 to 60 days on reinforcing bars. Wide-flange beams are on allocation.

• **New Orleans**—Contractors are finding that mesh and structural shapes are getting tight and anticipate that before long they will have to wait three to six months for delivery.

• **Buffalo**—Warehouse inventories are fast becoming depleted. Whereas contractors haven't as yet felt the pinch, steel fabricating concerns complain that they are very short of raw materials. Contractors report they have to wait six weeks for delivery of H piling, and four months for steel sheets and I beams.

• **Seattle**—There is no problem but suppliers are cautioning their customers to order further ahead than they have been doing to obtain reasonable deliveries.

• **Topeka**—Ross K. Keeling, former Kansas state highway engineer and now chief engineer for Howard, Needles, Tammen & Bergendoff, consulting engineers and for Kansas Turnpike Authority, reports: "Little trouble with reinforcing and mesh. H-beam piling and wide-flange beams slow in delivery but not serious yet. Deliveries are now scheduled in August. No emergency confronting us now that would indicate it will get critical. When we first started construction (early this year) there was a 30-day delivery (on steel beams). Early this spring it slowed down to 60 days—now it's 90-day delivery."

• Equipment

Here examples of tight schedules:

Connecticut dealers have been particularly hard hit, claiming it's as hard to get certain items of equipment now as in wartime. Tractors and dozers are reported to be especially difficult.

While Philadelphia dealers report having a sales problem on new equipment and say that used equipment is a drag on the market, the situation is quite different just a little further south in Wilmington and Baltimore.

In Wilmington, dealers report delivery of tractors and cranes very slow and are experiencing difficulty getting highway pavers and shovels. A Baltimore distributor reports that since February there have been delays of 60 to 90 days on practically all items, especially one-yard loaders and smaller shovels and cranes.

In Cincinnati, delivery time on tractors, cranes and shovels is reported to be 60 to 120 days. Dealers say equipment more than three or four years old is hard to move. They report many contractors are taking advantage of the new depreciation scale and the replacing old equipment but, most contractors have enough equipment on hand so that bottlenecks are unlikely.

A Des Moines distributor reports deliveries running a month to six weeks behind schedule and "we are told they are apt to get worse." Hardest to get are tractors and pavers.

Construction equipment suppliers have been on allocation for several months in northern California on several items, notably large tractors.

House Authorizes Military Projects

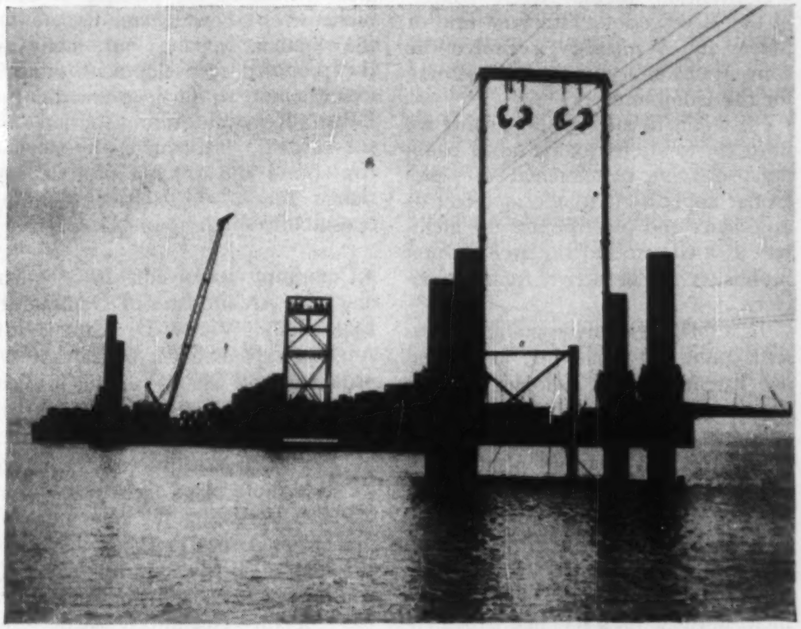
New military construction totaling $2.37 billion was voted this week by the House of Representatives. Included is a $50-million authorization for a new headquarters to house the Central Intelligence Agency. The bill okays $14 million more than the amount originally requested by the Defense Department (ENR April 28, p. 21).

The Senate will approve just about what the House recommended. There may be some minor changes, but it is unlikely that the total will be much affected.

Money to finance the authorized work comes up next for Congressional action. The House Appropriations Committee has been waiting for the bill on military construction authorizations. Until the authorization measure came out, the Defense Department could not firm up its estimate of how much new money would be needed. The Appropriations Subcommittee on Defense now can start hearings promptly, on an informal basis if necessary, even before the Defense Department estimate is received.

The authorization bill indicated that the money request for military construction might run larger than the $2 billion estimated in the President's January budget message. With few exceptions, money must be voted this year for all the new construction that will be authorized. In addition, there are some projects authorized in earlier legislation, such as the Air Force Academp approved last year, for which funds are needed at this session.

The House Armed Services Committee had gone through the authorization bill with a fine-tooth comb.



Aerial Cableway Lands Army Supplies

U. S. Army has developed an aerial cableway for landing military supplies ship-to-shore across open beaches where no piers or other harbor facilities are available.

At Fort Eustis, Va., a series of 100-ft high steel towers were built out ½ mi into the James River to a specially-constructed sea terminal. The towers support parallel steel cables along which travel self-propelled cams capable of carrying 15 tons to 20 tons of cargo at speeds of up to 30 mph. The cars are powered by 135 hp gasoline motors.

The seaward end of the system is anchored on a "spud barge." Towed into position, this barge lowers cylindrical steel piles, or "spuds," to solid footing and raises itself above tide level by means of jacks.

Experienced troops can assemble and erect the portable towers and cable system in a day or less. The Army expects the cableway will permit greater selection of sites for discharge of cargo under combat conditions. It could be used at wrecked ports, rocky coasts or shores that are heavily mined.

The Research and Development Command of the Army's Transportation Corps moved 540,000 tons of cargo ashore at Fort Eustis during a 2,000 hr test. Capacity of the cableway is expected to approximate 120 tons an hour from ship to shore.

The Community Is AIA Theme

Architects urged to work for more disciplined community planning; their aid in promoting urban renewal sought

Architects heard prominent speakers last week urge them to broaden their concepts of community design. The occasion was the 87th annual convention of the American Institute of Architects, held in Minneapolis.

As one speaker put it: "Architecture today can no longer concern itself only with that particular set of structures that stand upright and are hollow buildings, in the conventional sense. It must concern itself with all manmade elements which form our environment; with outdoor spaces as created by structures, with roads and highways, with signs and posters, with cityscape and landscape."

• **Convention theme**—Albert Mayer, of the New York architectural firm of Mayer and Whittlesey, keynoted the convention, in a paper on "Designing for the Community."

"It seems to me," he said, "that we must try to stretch out a broad panorama—or frame of reference—with particular application to the architect as a designer and practitioner, the architect as a citizen and the architectural profession as an active force in society."

In a rather gloomy appraisal of current community planning, he warned his listeners that "galloping" slums are developing not only in cities and suburban areas, but also in rural areas where big new factories plant themselves and attract new labor without a housing or community program.

Because much of the disorder in community planning is regional, Mayer said any new order of development must be on a regional basis. He called for: ". . . a public land acquisition policy that is not just a hand-to-mouth affair making purchases for each separate project as it arises . . . more than minimal control over the private developers who can build just about anywhere they please . . . more definite civic and social responsibility by industrialists who decentralize their operations . . . and planning bodies regional in scope, supplied with enough authority to plan boldly and to exercise real control of development projects."

• **Rebuilding the city**—One six-member panel devoted its entire discussions to rebuilding the city. A few of the highlights:

"In order to be fully effective, city planning needs the architect in five separate and distinct capacities: as an architect in designing buildings; in urban redevelopment and renewal; as planning consultant; as member of a planning board or commission; and as an informed citizen who understands the problems of orderly and effective planning."—John T. Howard, President, American Institute of Planners.

"Planning is a cooperative process. It requires the organized and cumulative inspiration, thought and experience of professional qualified individuals leavened by the collective common sense of citizens and civic leaders."—Marcia J. Rogers, Pittsburgh (Pa.) Regional Planning Assn.

"Architects and planners have made great strides in the practice of comprehensive, city-wide architecture for the human welfare, but many of the proposed redevelopment projects which come to final review by the Urban Renewal Administration are substandard, inadequate, unimaginative, timid and a waste of time and public funds."—Carl Eiss, planning consultant, Washington, D. C.

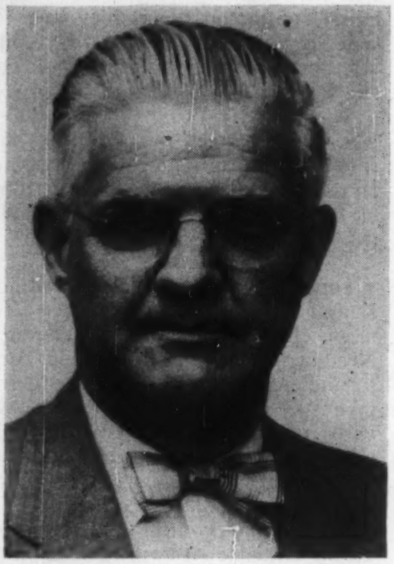
• **Community expansion**—In a seminar on "The Architecture of Community Expansion," Victor D. Gruen, Los Angeles, expressed the belief that the principles and lessons learned in planning suburban integrated centers can be applied to the cores of our cities.

"For large-scale success, however, we need more plans and energy; more effective legislation for condemnation proceedings; legal weapons to fight the battle; better zoning laws and zoning practices; and a liberal policy of federally guaranteed loans," he said.

So-called satellite or dormitory-type communities surrounding a central city often present planning problems of unusual magnitude, said Park H. Martin, executive director, Allegheny Conference on Community Development.

• **Urban renewal**—How the AIA and its members can aid in the fight for slum clearance or urban renewal was outlined in a talk by James W. Follin, Urban Renewal Administration Commissioner.

Each local chapter could create an urban renewal committee to assist local authorities and urge appointment of architects to housing authorities, redevelopment agencies or other organizations promoting urban renewal. And finally, the AIA should join other national organizations in support of the whole movement.



NEW PRESIDENT of AIA is George Bain Cummings of Binghamton, N. Y.

The urban renewal program, authorized last year as part of the 1954 Housing Act, already has approved grants totaling $170 million for 99 projects, and 194 other projects now being planned are estimated to require an additional $250 million of federal funds, said Follin.

• **Honor awards**—Five buildings were selected for first honor awards and 22 received awards of merit.

One of the five honors went to Ero Saarinen and Associates for the women's dormitories at Drake University, Des Moines, Iowa. This same firm teamed up with Smith, Hinchman & Grylls, Inc., to win a second award for the General Motors Technical Center's restaurant building at Warren, Mich.

The other three first honor awards were for the U. S. Embassy in Stockholm, designed by Ralph Rapson of Minneapolis and John Van Der Meulen, Chicago, under the State Department's foreign building operations; the North Hillsborough (California) Elementary School, by Ernest J. Kump, Palo Alto, and the General Telephone Company building in San Angelo, Tex., by Pace Associates, Chicago.

Top professional honor went to Willem Marinus Dudok, Dutch architect and city planner.

• **New Officers**—George Bain Cummings, Binghamton, N. Y., was elected president of AIA succeeding Clair W. Ditchy, Detroit; Earl T. Heitschmidt, Los Angeles, was re-elected first vice-president.

New Federal Water and Power Policies Urged

Hoover, Kestnbaum Commissions advise unified water resources plan, local responsibility, less federal financing

Sweeping changes in federal policy and practice on water resources and power are in the offing if President Eisenhower and the Congress go along with recommendations that were presented this week by two top-level commissions.

The reforms, if carried out, would put more reliance on state, local and private development, would reduce the federal share of project costs, and would increase the return on each federal dollar invested.

Authorized future construction with a potential value of some $65 billion is affected by the proposals. Under present policy, the federal government is the main source of funds for this work with current appropriations running about $750 million a year. The recommendations would shift responsibilities to local areas and tap local organizations for funds.

Basic revision of national policy and a tightening of administrative control are advocated by the Hoover Commission in its long-awaited Report on Water Resources and Power. The twelve-man commission would limit federal construction to projects of national significance, would halt federal power expansion, and would set up a Water Resources Board in the office of the President to ride herd on all planning, construction and operation of projects. No federal dams or power facilities would be sold, but the government would build no more steam plants or duplicating transmission lines.

Main ideas of the Hoover report are backed up by recommendations of the Kestnbaum Commission on Intergovernmental Relations—affecting the federal, state and local governments. Both groups emphasize the prime need for a unified, consistent national water resources policy that will apply across the board to all activities and agencies of the federal government. And the Kestnbaum Commission calls for a board of coordination and review to advise the President and Congress on natural resources.

Many other government activities —including federal aid for highways, hospitals, airports and schools—are covered in the one-volume comprehensive report of the 25-member Kestnbaum Commission. But both it and the Hoover group have something to say on two aspects of water resources development—financing the construction and recognition of local laws.

• **Local responsibility**—The Hoover report would shift financing to state, local or private interests for all projects that don't have national importance. Further it would encourage similar local financing of reimbursable costs—such as power and water supply—in federal projects, with the federal government continuing to pay the bill for flood control and navigation components—and part of the irrigation cost. Management of all government-built dams, however, would remain in federal hands.

In broader terms, the intergovernmental group makes a general recommendation that costs of multi-purpose, basinwide developments be equitably divided between the national government and the states.

Both reports give recognition to state and local laws. The Hoover Commission says the federal agencies should "take account" of the rights and laws of the separate states, while the Kestnbaum group explicitly states that the national government should "observe" local laws governing inland waters.

Likewise, both bodies speak up for state representation on federal commissions or boards that investigate, plan, construct or operate projects.

In its more detailed report, specifically addressed to water resources and power, the Hoover Commission made a number of significant proposals:

• **Agency functions**—In sharp contrast with the 1949 report of the first Hoover Commission, the present group recommends no shift in the flood control and rivers and harbors functions of the Corps of Engineers. Instead, the civil works of the Army Engineers would be expanded by a transfer to the Corps of headwater dams that are now under the Soil Conservation Service of the Department of Agriculture.

• **Project evaluation**—For tighter screening of proposals and better evaluation of benefits and costs—severely criticized by the Hoover group—the report recommends strengthening of the professional staff in the Bureau of the Budget.

• **TVA**—The commission apparently would limit the power expansion of TVA by its general restriction on building of federal steam plants, with the accompanying suggestion that power needs be met by tying into adjacent power systems. The group does recommend, however, that TVA finance future improvements by selling its own securities to the public, without subordinating the present federal investment.

• **Acreage limitations**—The Hoover group suggests amendment of federal reclamation law to do away with the 160-acre restriction on size of irrigated farm that can be owned by one landholder—as a means of improving feasibility of reclamation projects.

• **Waterway charges**—Collection of user charges on inland waterways, sufficient to cover maintenance and operating costs, is advocated in the report. Small pleasure craft would be excepted. The Interstate Commerce Commission would set the rates.

• **Federal power**—Rates for sale of power from federal plants, the Hoover Commission declares, should be regulated by the Federal Power Commission. Further, the rates should be at about the level a private utility would have to charge—enough to amortize the investment with interest, plus an amount that equals federal tax exemption and also provides payments in lieu of taxes to state and local governments.

Private utilities would get a chance to buy a fair share of federal power. All federal power systems would be set up as corporations under the Government Corporation Control Act, just as TVA is now.

• **Agency funds**—Revolving funds at present administered by some agencies —to finance construction and other activities—should be abolished, the Hoover group says. On the contrary, all federal agencies that have revenue-producing projects should pay all cash receipts into the Treasury and receive an annual appropriation to cover expenditures.

• **Partnership projects**—Private enterprise should be permitted to furnish the capital for the power component of multi-purpose projects, the Hoover report states, with the federal government to retain control of the dam. If private or local capital doesn't come forward to finance the power investment, the power itself should be offered for sale prior to construction.

• **De-authorizing projects**—Congress should withdraw the authorization of all projects which the Chief of Engineers declares obsolete or unsound, the Hoover Commission says.

Education Report

ASEE gets final report on engineering education from special committee

The long awaited final report on evaluation of engineering education in this country was submitted to the American Society for Engineering Education at its annual meeting at State College, Pa., June 20-24.

Prepared by a committee set up in 1952, the report recommended a strengthening of work in the basic sciences of mathematics, chemistry and physics; strengthening of work in the basic engineering sciences and less specialization; more emphasis on engineering analysis and design; and integration of the humanistic and social sciences into the engineering program.

ASEE also received the preliminary report of a special committee set up to study the place of humanistic-social studies in engineering. Like the evaluation committee, this committee recommended closer coordination of the teaching of engineering with the liberal arts.

Absent from the final report of the evaluation committee was a proposal made in its 1954 interim report to set up two types of curricula in engineering schools—one called professional-general for average students and one called professional-scientific for students who expect to take graduate study. That proposal met with strong opposition at the time it was made.

In its final report the committee recommended giving gifted students a variety of elective courses, as is now done in some schools, and permitting them to carry a heavier academic load than the average student.

• **Division of time**—The committee said a scientifically oriented curriculum should require a student to give about one-fourth of his time to mathematics and the basic sciences, one-fourth to engineering sciences, one-fourth to the sequence of engineering analyses, design, and engineering systems, about one-fifth to humanistic and social studies and one-tenth to electives.

The committee placed special stress on the need for an adequate faculty and outlined methods for selecting and developing an engineering faculty. It noted that salaries must be at a level to permit the schools to compete with industry in obtaining qualified personnel.

Stronger graduate study programs are needed, the committee said, but it added that they should be set up only in schools that have adequate administrative and financial support and specially qualified faculty members. Students for graduate study should be carefully selected, it said.

Finally, the committee recommended action on its proposal before the problem of educating many more engineering students becomes more critical.

• **New officers**—Maynard M. Boring, manager of the Technical Personnel Service Department of the General Electric Company, was elected president of ASEE to succeed N. W. Dougherty. This is only the second time in its 63-year history that the society has picked a man from industry as president. New vice presidents are William T. Alexander of Northwestern University and Frederick C. Lindvall, California Institute of Technology.

Award of the Lamme Medal was made to Vannevar Bush, and the George Washington Award went to Robert R. White, professor of chemical engineering at the University of Michigan.

ARBA Recommends Change In Renegotiation Law

The American Road Builders' Association has recommended that the Renegotiation Act be amended to exempt from renegotiation those construction contracts awarded by competitive bids.

The recommendation was made to the Senate Finance Committee during hearings on a bill to renew the act for two years. The suggested amendment would exempt from renegotiation the construction, reconstruction, betterment or repair of public works, military installations and other federal projects built under contracts awarded on the basis of open competitive bidding.

As now amended the Renegotiation Act for 1951 exempts standard commercial articles. Although construction contracts do not fall within this category, ARBA believes that competitive conditions in the construction industry today offer a comparable basis for exemption.

Austin E. Page, director of ARBA's contractors division, presented the request to the Senate committee. Page explained that ARBA does not oppose the renegotiation in principle but believes that conditions now existing in the construction industry no longer justify continuing renegotiation procedures for construction contracts awarded by competitive bids.

"Interests of the federal government are adequately protected under normal conditions now existing in the construction industry," Page said.

Powerhouse Award

Ontario Hydro negotiates St. Lawrence contract with third low bidder

The Ontario Hydro Electric Power Commission has awarded the contract for construction of the Canadian portion of the St. Lawrence international powerhouse to a Canadian firm that originally bid more than $4 million higher than the low bidder, which was the Canadian branch of an American firm.

The contract went to Irquois Constructors, Ltd., Toronto for $21.9 million. Irquois Constructors originally bid $23.3 million, but the commission negotiated the contract at the lower figure.

Low bidder was C. A. Pitts General Contractors, Ltd., Toronto, the Canadian division of Merritt-Chapman & Scott Corp., New York, at $18.9 million. This was the second time Merritt-Chapman & Scott Corp. was low bidder for a major St. Lawrence job but failed to get the contract. In May the New York Power Authority awarded the contract for the United States half of the same powerhouse to a combine headed by B. Perini & Sons, Inc. of Framington, Mass., although the combine originally had bid more than $1 million higher than Merritt-Chapman & Scott Corp. in association with Savin Construction Corp. of East Hartford, Conn. (ENR May 19, p. 27). The Power Authority negotiated the contract at a figure that was $400,000 less than the low bid.

In explanation of the award, the Ontario Hydro Electric Power Commission said:

"Special attention was paid to the existing work loads of bidders, the breadth of their respective experience in this field and the vital importance of strict adherence to time schedules."

The powerhouse will be a reinforced concrete gravity structure with a maximum height of approximately 160 ft above the foundation. It will be 1,565 ft long.

Other bidders for the job included B. Perini & Sons of Canada, Ltd., whose bid was $22.6 million, Pigot Construction Co., Ltd., and St. Lawrence Contractors, Ltd.

Irquois Constructors was formed by five Canadian construction firms to bid for St. Lawrence power and Seaway jobs. The five firms are Foundation Company of Canada, Ltd., Toronto; Angus Robertson, Ltd., Toronto; Pentagon Construction, Ltd., Montreal; Rayner & Armstrong, Ltd., Toronto; and Canadian Comstock, Ltd., Toronto.

Washington Predicts . . .

1955 Will Be a Record Year for Construction

1955 seems bound to be the best construction year in history. Activity so far this year is at a record level. And there is no sign of any let-up during the last half of the year.

The mid-year estimates of the Departments of Commerce and Labor predict a total construction volume this year of $41.8 billion, 11% above last year's record of $37.6 billion.

This represents a substantial boost of the estimates the two federal departments made at the end of last year. Then, they predicted that construction in 1955 would reach $39.5 billion, an increase of 6% over 1954.

Both private and public construction are expected to reach an all-time high this year. Private expenditures probably will be up 14% to $29.5 billion, and public construction spending is likely to rise 4% to $12.3 billion.

• **The "ifs"**—These forecasts of the Commerce and Labor Departments are based on several assumptions. First, it is assumed that business in general will hold at peak levels. Then, there is the assumption that mortgage money will continue to be available on favorable terms. And finally, supplies of building materials must be adequate. Government experts believe this will be true despite current spot shortages of cement and gypsum wall board (see page 21).

The figure of about 1,300,000 new private nonfarm housing starts this year would be topped only by the 1,350,000 private units in 1950.

The projected $14.6 billion of expenditures on private housing construction in 1955 is about 20% higher than in 1954, the previous peak year. This increase reflects an 8% to 10% rise in starts and a very large carryover of work begun in 1954. The dollar totals also reflect some increase in costs, together with a trend toward larger and more expensive homes.

Types of construction which are strongly influenced by the growth and movement of population—schools, churches, stores, office and professional building, utilities, service stations, and roads—are expected to break records in 1955. Commercial building probably will show the sharpest increase from 1954, rising about 30% to nearly $2.9 billion.

• **Utility spending**—Outlays by public utilities will rise again in 1955 to $4.5 billion. Petroleum pipeline construction and gas plant expansion will hit new highs and will more than offset declines in railroad and electric power construction.

More money will be spent in 1955 than in 1954 on private industrial building, reversing a downtrend of the past three years. Primary ferrous metal, chemical, steel and food processing plant expansion—plus increased outlays for modernization of facilities—will account for most of the gain.

New sewer and water facilities put in place in 1955 are expected to exceed $1 billion for the first time. Educational building also should set a new high mark at about $3 billion, even though indications now are that private school construction will show a 5% decline.

Expenditures for highway construction probably will reach an unprecedented $4.2 billion, 12% above the 1954 figure. Expanded federal aid will be a main factor behind this gain.

Private spending for hospital construction will be up but will fail to offset decreases in public outlays by federal, state and local governments. Also expected to show declines are farm construction, public housing, conservation and development work (because of decreases in reclamation projects and TVA steam plant construction) and public industrial building, especially installations for the Atomic Energy Commission.

Construction at military bases will show a gain this year, but federal construction spending as a whole is likely to be down by more than 10% to $3.6 billion. Spending by state and local governments is expected to rise to a new high of $8.7 billion.

New Construction Activity in Continental U. S. '54 and Outlook for '55*

(In millions of dollars)

Type of Construction	1954	1955	% Change
PRIVATE			
Residential (excluding farm)			
New dwelling units	$12,070	$14,600	+21
Additions and alterations	1,130	1,200	+ 6
Nonhousekeeping	296	325	+10
	$13,496	**$16,125**	+19
Nonresidential building			
Industrial	$2,030	$2,200	+ 8
Warehouses, office and loft bldgs.	958	1,075	+12
Stores, restaurants and garages	1,254	1,800	+44
Religious	593	750	+26
Educational	529	500	− 5
Hospital and institutional	337	370	+10
Social and recreational	228	265	+16
Miscellaneous	321	325	+ 1
	$8,258	**$9,495**	+27
Farm construction	**$1,560**	**$1,400**	−10
Public Utility			
Railroad	$353	$300	−15
Telephone and telegraph	655	675	+ 3
Local transit	25	25	0
Pipeline	300	325	+ 8
Electric light and power	1,900	1,850	− 3
Gas	1,108	1,325	+20
	$4,341	**$4,500**	+ 4
All other private	**$121**	**$175**	+45
TOTAL PRIVATE CONSTRUCTION	$25,768	$29,485	+14
PUBLIC			
Residential	**$336**	**$250**	−26
Nonresidential building			
Industrial	$1,506	$870	−42
Educational	2,134	2,550	+19
Hospital and institutional	365	310	−15
Other nonresidential building	636	760	+19
	$4,641	**$4,490**	− 3
Military facilities	**$1,030**	**$1,150**	+12
Highway	**$3,750**	**$4,200**	+12
Sewer and water	**$982**	**$1,100**	+12
Misc. public service enterprises	**$218**	**$300**	+38
Conservation and development	**$704**	**$650**	− 8
All other public	**$148**	**$175**	+18
TOTAL PUBLIC CONSTRUCTION	$11,809	$12,315	+ 4
TOTAL NEW CONSTRUCTION	$37,577	$41,800	+11

* Joint estimates Dept. of Commerce & Dept. of Labor.

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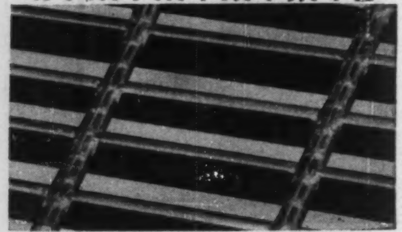

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Concreting Deck Rises as Silos Go up

When round-the-clock concreting completes 44 silos, the Farm Bureau Cooperative Association in Columbus will own Ohio's biggest terminal grain elevator. The $1.3-million facility—300 ft long, 100 ft wide and 127 ft tall—will increase the terminal's capacity by 2,000,000 bu—from 3,500,000 to 5,500,000. Some 10,000 cu yd of concrete will be placed through 7-in. slits in a giant platform, which with men and equipment, is raised by jacks. Construction is by the slip-form method.

Court Says Bid Shopping Violates Implied Contract

A Tacoma, Wash., court has ruled that a contract is implied when a general contractor uses figures supplied by a specialty contractor in preparing his bid for a prime contract.

Judge John D. Cochran made the ruling in Pierce County Superior Court in a case brought by Milone & Tucci, plumbing contractors, against Bona Fide Builders. Appeal of the decision is likely.

Milone & Tucci charged that Bona Fide Builders used figures the plumbing firm supplied in bidding on a government contract but then awarded the subcontract to another plumbing contractor on a lower bid.

Milone & Tucci sued for loss of profit on the job, and Judge Cochran held that the firm should have been entitled to the work because its figures were used in preparing the bid.

Milwaukee Freeway System Gets Engineers' Approval

Consulting engineers have reported that the planned 38.5-mi Milwaukee County, Wis., expressway system would cost some $221 million at present day costs but would be economically feasible.

The report by Parsons, Brinckerhoff, Hall & Macdonald and Amman & Whitney divides costs into two categories: construction, estimated at $143 million and land purchases for right-of-way, $78.1 million.

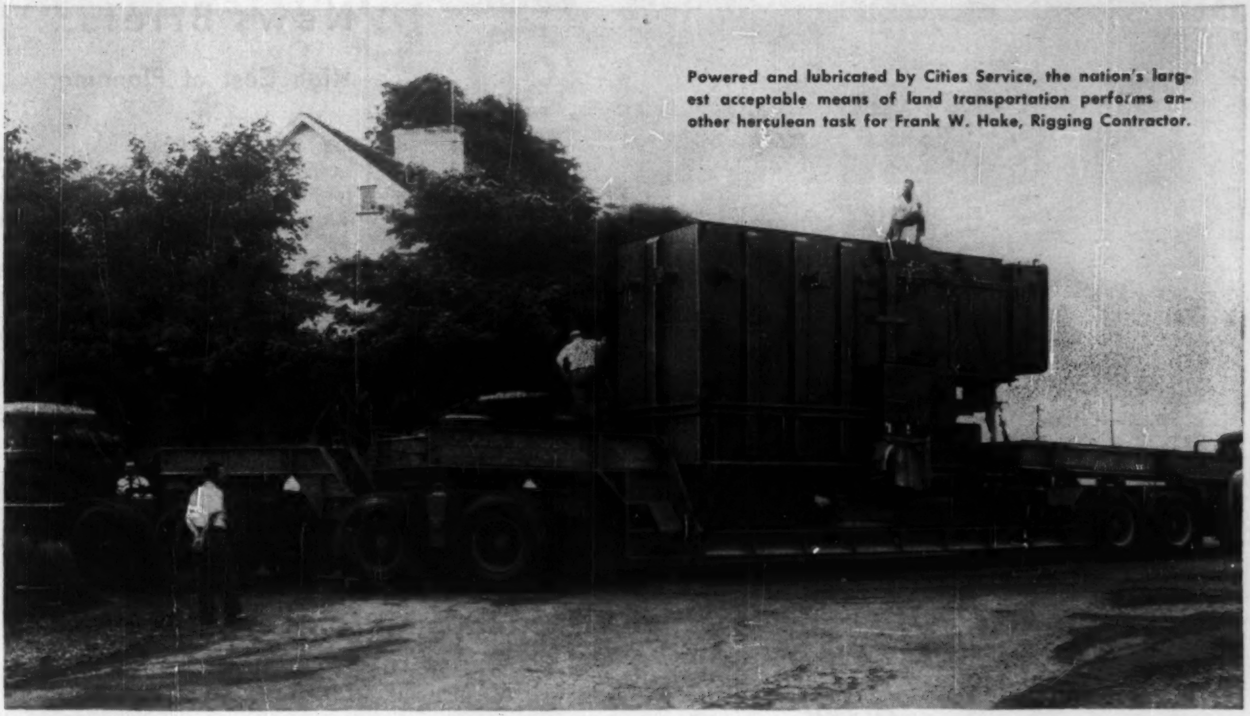
It was estimated that direct users of the system would save at least $123,000 each weekday (not including holidays) or $38.8 million annually.

California Bill Authorizes Lease-Purchase School Plan

The California state legislature has passed a bill authorizing lease-purchase construction of schools.

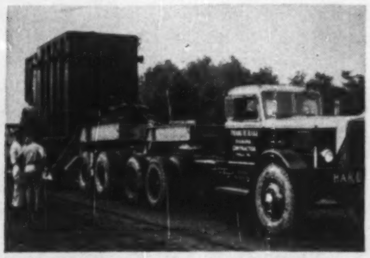
The lease-purchase legislation, expected to win the approval of Gov. Goodwin J. Knight, would limit any lease to 40 years. Under the bill school districts would be required to call an election before entering into an agreement—unless the districts were financially able to make lease payments without increasing the existing maximum school district tax rate.

The bill sets up two types of elections. One could be called before an agreement is entered into; the other, after the governing board of the school district had opened bids and accepted a lease. If an election were held prior to a lease agreement, and the majority of voters approve it, the board could proceed with the plan. If a lease were agreed upon and then a majority of electors voted against the proposition, the agreement would be void.

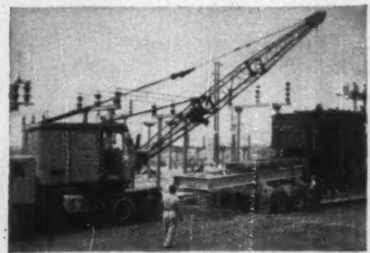


Powered and lubricated by Cities Service, the nation's largest acceptable means of land transportation performs another herculean task for Frank W. Hake, Rigging Contractor.

A MOVING EVENT: 241 TONS OVER SECONDARY ROADS!



"Our Best Move Was To Cities Service," says Partner Glenn Hake. "It's been paying off for eight years with less down-time, less oil consumption, greater period between overhaul. I heartily recommend Cities Service products for any rigging operation."



More Craning, Less Straining is another benefit enjoyed by the Frank W. Hake firm, using Cities Service products. Trucks, tractors, trailers, hoisting engines—all 36 pieces of mechanized equipment get Cities Service care.

Carrying a 91-ton transformer over secondary roads is just routine work for this mammoth rigging unit of the Frank W. Hake rigging firm, Philadelphia, Pa.

The nation's largest acceptable means of land transportation, the unit measures over 106 feet long, 12 feet wide, 17½ feet high and weighs 150 tons just by itself!

All told, that's 241 tons on the move, thanks to the power and lubrication of Cities Service petroleum products!

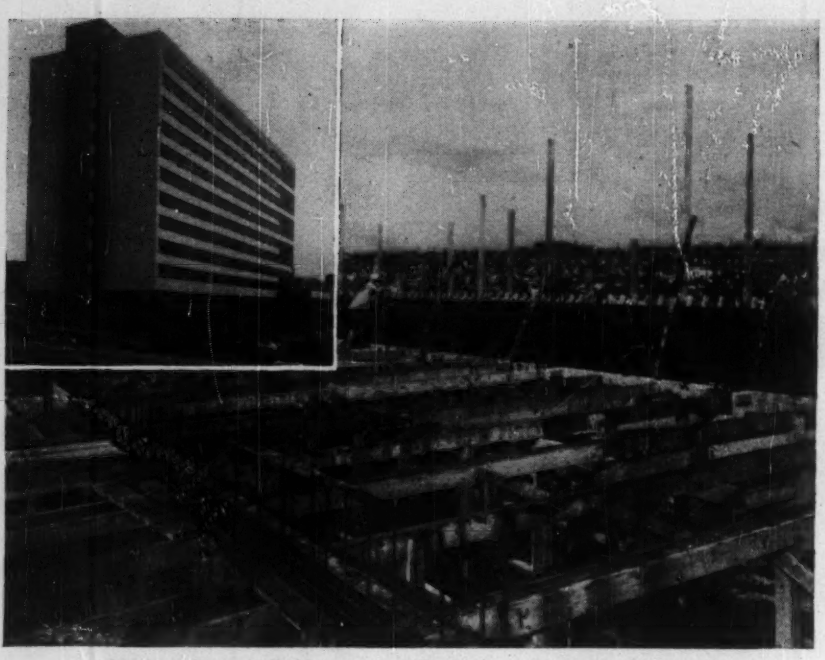
Why Cities Service? Partner Glenn F. Hake puts it this way: "When you work with the biggest piece of equipment, you've got to choose the petroleum products that do the biggest job . . . and that's Cities Service. For the past eight years, we've used Cities Service gasolene, diesel fuel, lubricants, and solvents—in *all* our transportation and construction equipment . . . trucks, tractors, trailers, truck cranes, hoisting engines, air compressors, and other equipment too numerous to mention. In fact, we even use Cities Service Fuel Oils to heat our business properties and our homes.

"We can truthfully state, without reservation, that we have had excellent service and performance at all times, and would heartily recommend Cities Service products to others."

If you're interested in Mr. Hake's suggestion, talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS



Men's residence hall, University of Washington, Seattle. Architects—Young, Richardson, Carleton and Detlie. General Contractor—Strand & Sons.

MASONITE *Concrete Form* **PRESDWOOD**

Smooths the Way!

"The smoothest surface we have ever been able to produce," says Ray W. Strand, of Strand & Sons, Seattle, about architectural concrete formed with Masonite Concrete Form Presdwood.

Not only the walls, but the ceiling slabs, columns and beams were formed with this dense, grainless hardboard. In some cases, Mr. Strand reports, panels were used a dozen times. The 4′ x 8′ and 4′ x 12′ sizes were easy to work and handle, created fewer fins.

Cut Costs 3 Ways!

1. Screen side to concrete—for unpainted surfaces. Tiny projections left in the concrete cut hand-rubbing costs up to 50%.
2. Screen side to concrete—for painted surfaces. The textured surface left in the concrete forms an excellent bond for paint. Only minimum rubbing required.
3. Smooth side to concrete—for painted or unpainted surfaces. Rubbing virtually eliminated. No knots, grain or blemishes in Presdwood to mar the finished concrete surface.

Look For This Man—He Makes The Difference

MASONITE® CORPORATION

MANUFACTURER OF PRESDWOOD® PANEL PRODUCTS

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Please send me a sample of Concrete Form Presdwood and your free booklet.

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Firm...

Address..

Town.......................... *Zone*...........

County........................ *State*..........

"Masonite" signifies that Masonite Corporation is the source of the product

News Briefs...

High Cost of Planning

New York City's largest fee for filing preliminary building plans has been paid by Webb & Knapp, Inc., for the Palace of Progress project. The $109,000 tax is approximately nine times greater than any paid up to now. Plans for the Palace of Progress, an international merchandise mart over Pennsylvania Station, call for the world's largest building (ENR June 16, p. 26).

Balancing the Budget

Washington State Toll Bridge Authority has authorized a committee to study the financial feasibility of a $140-million project to bridge Puget Sound and Hood Canal west of Seattle. The committee, headed by Blyth & Co., Lehman Brothers and A. C. Allyn & Co., will report whether the project can be financed from tolls and ferry fares.

Industry on the Move

A $50-$60 million industrial development is planned for the 443-acre site now occupied by one of the first U. S. municipal airports—Brainard Field in Hartford, Conn. Underwood Corp., which eventually will occupy as much as three-fourths of the development, is expected to start construction of a 1,500,000 sq ft building in November. This would be New England's largest one-story building.

The Sky's the Limit

Kahn & Jacobs, New York City architects, has been selected to design Manhattan's tallest post-war building—a 43-story office skyscraper slated to go up on Park Ave. The $30-million building will contain 1,200,000 sq ft of rentable space. Structural engineers will be Severud-Elstad-Krueger. Mechanical engineers will be Jaros, Baum & Bolles.

End of a Study

A $15.6-million program of sewer construction has been recommended to rebuild and extend Omaha's antiquated system. This price tag was placed on sewer needs by the consulting engineering firm of Henningson, Durham & Richardson, Inc., which was hired by the Omaha Sanitation Commission to make the study. The firm listed $6.1 million worth of projects as urgent; $395,000 worth as deferred urgent; $3 million as necessary, and $5.6 million as desirable.

WHEN CONSTRUCTION JOBS CALL FOR SOIL COMPACTION

BARCO is the ANSWER!

WHEN YOU'RE FIGURING FOR THE "LOW BID"—No other tool can give you the economy and dependability offered by Barco Rammers on high degree soil compaction for all kinds of projects—Atomic Energy, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Airports, Bridges, Buildings, and Housing Developments!

WHEN YOU HAVE TO MEET TOUGH SPECIFICATIONS—In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful for compacting fill in restricted areas. ONLY the Barco Rammer can produce specified high degree compaction on lifts up to 20 inches.

WHEN YOU'RE UP AGAINST A TIGHT SCHEDULE—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour. *When time is at a premium, BARCO PERFORMANCE PAYS DIVIDENDS*—find out about it NOW!

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YES! I want to know about Barco Rammers for Soil Compaction:

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☐ Please send me the name and address of your nearest dealer.

☐ Without obligating me, I would be interested in a DEMONSTRATION.

☐ Please send General Catalog No. 621.

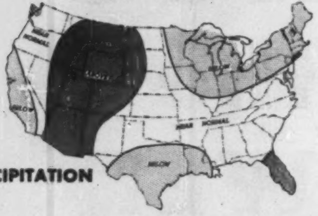
☐ Please send free bulletin on "SOIL COMPACTION COST DATA."

WEATHER

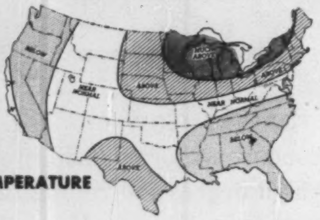
30-DAY WEATHER OUTLOOK

Mid-June to mid-July

by U.S. Weather Bureau



PRECIPITATION



TEMPERATURE

Observed weather in 20 cities, compared with normals

	Precipitation, inches				Temperature, degrees			
	Precipitation, inches				Temperature, degrees			
	May 1955	Departure fr. normal	5 Mos. 1955	Departure fr. normal	May 1955	Departure fr. normal	Av. daily maximum	Av. daily minimum
Atlanta	2.43	−1.39	18.92	−4.48	72.7	+2.7	83.1	62.2
Baltimore	2.34	−1.67	10.99	−7.02	65.2	+2.3	76.0	54.3
Birmingham	4.81	+1.07	26.56	+1.71	72.9	+3.4	84.8	60.9
Boston	0.99	−1.92	15.56	−0.67	62.8	+5.0	73.2	52.3
Chicago	3.86	+0.20	10.91	−1.67	63.8	+4.6	75.1	52.4
Cincinnati	3.97	+0.43	20.77	+3.53	65.7	+2.1	76.1	55.3
Cleveland	5.00	+2.27	19.22	+6.37	62.7	+3.6	73.7	51.6
Dallas	4.14	−0.83	11.10	−5.64	77.1	+3.4	87.7	66.4
Denver	1.77	−0.29	3.51	−2.75	60.1	+2.8	71.9	48.2
Detroit	1.16	−2.45	9.45	−3.70	61.9	+4.1	72.8	51.0
Kansas City	7.44	+3.03	15.21	+2.09	67.6	+2.1	76.0	59.1
Los Angeles	1.43	+1.17	9.04	−0.50	63.0	−1.8	71.0	54.9
Minneapolis	0.69	−2.43	4.14	−4.06	63.3	+4.8	75.0	51.5
New Orleans	4.81	−0.62	24.34	−2.06	79.8	+3.7	87.8	71.5
New York	1.80	−1.71	12.13	−4.75	63.3	+2.6	72.0	54.6
Philadelphia	0.91	−2.67	10.58	−6.09	66.1	+3.0	76.7	55.4
Pittsburgh	1.71	−1.78	14.95	+0.49	64.7	+2.1	75.5	53.8
St. Louis	1.99	−2.11	11.72	−4.23	69.2	+3.0	77.6	60.7
San Francisco	0.04	−0.06	7.05	−5.26	56.6	−0.5	63.6	49.6
Seattle	1.54	+0.07	10.16	−4.54	53.1	−4.2	60.4	45.7

Precipitation range in 20 cities, in inches

Table shows range observed 33.3% of time. Rainfall heavier 33.3% of time, lighter 33.3% of time.

Computed by U. S. Weather Bureau (based on historical records of actual precipitation)

City	June	Mid June-Mid July	July	Mid July-Mid Aug.	Aug.	Mid Aug.-Mid Sept.	Sept.*	Mid. Sept.-* Mid. Oct.	Oct.	Mid. Oct.-Mid. Nov	Nov.	Mid Nov.-Mid Dec.	Dec.	Mid Dec.-Mid Jan.
Atlanta	2.87/4.43	2.93/4.62	2.99/4.80	2.89/4.90	2.79/5.00	2.24/4.30	1.69/3.60	1.64/3.35	1.59/2.90	2.01/3.38	2.43/3.85	2.94/4.58	3.46/5.30	3.42/5.32
Baltimore	2.52/4.44	2.57/4.71	2.61/4.98	2.91/5.32	3.20/5.66	2.65/4.51	2.10/3.36	1.88/3.57	1.66/3.77	1.16/3.45	1.56/3.12	1.99/3.43	2.41/3.73	2.59/3.85
Birmingham	2.64/4.84	3.29/5.18	3.94/5.53	3.44/5.39	2.92/5.25	2.32/4.47	1.71/3.69	1.62/3.14	1.52/2.58	1.84/3.24	2,17/3.91	2.94/4.83	3.71/5.75	3.75/5.58
Boston	2.09/3.50	2.35/3.76	2.61/4.02	2.60/4.36	2.59/4.70	2.32/4.20	2.04/3.70	2.26/3.88	2.49/4.07	2.62/4.26	2.74/4.46	2.82/4.33	2.89/4.20	2.83/4.12
Chicago	2.42/3.67	2.46/3.66	2.49/3.65	2.31/3.65	2 13/3.65	2.11/3.70	2.09/3.75	1.84/3.42	1.59/3.10	1.59/2.95	1.59/2.80	1.46/2.62	1.32/2.45	1.30/2.28
Cincinnati	2.69/4.50	2.54/4.10	2.39/3.70	2.32/3.95	2.24/4.20	2.02/3.64	1.79/3.08	N.A.	1.49/2.90	1.74/3.28	1.99/3.67	2.14/3.48	2.29/3.28	2.32/3.54
Cleveland	2.00/3.56	2.24/3.82	2.47/4.08	2.15/3.84	1.83/3.60	2.07/3.51	2.30/3.41	2.03/3.29	1.75/3.16	1.79/2.97	1.82/2.77	1.76/2.68	1.70/2.56	1.65/2.58
Dallas	1.79/4.45	1.59/3.72	1.39/3.00	1.30/2.89	1.22/2.78	1.50/2.94	1.77/3.10	1.66/3.30	1.55/3.50	1.60/3.25	1.64/3.00	1.36/3.00	1.09/3.00	1.24/3.05
Denver	0.67/1.75	0.94/1.88	1.21/2.00	1.04/1.86	0.87/1.73	0.60/1.39	0.52/1.05	0.57/1.08	0.62/1.10	0.46/0.89	0.29/0.68	0.34/0.72	0.39/0.77	0.28/0.64
Detroit	2.84/4.10	2.46/3.90	2.09/3.70	1.94/3.54	1.79/3.38	1.80/3.41	1.82/3.44	1.72/3.02	1.68/2.69	1.70/2.66	1.77/2.78	1.70/2.66	1.64/2.60	1.63/2.50
Kansas City	3.61/6.25	3.19/5.47	2.77/4.69	2.74/4.84	2.70/5.00	2.84/5.00	2.99/5.00	2.34/4.54	1.69/4.07	1.48/3.21	1.27/2.35	1.02/1.95	0.77/1.55	0.68/1.48
Los Angeles	0.00/0.02	0.00/0.01	0.00/T	0.00/T	0.00/T	0.00/0.02	T/0.03	0.08/0.32	0.15/0.60	0.20/0.95	0.26/1.30	0.70/2.00	1.14/2.70	1.19/3.00
Minneapolis	3.14/5.00	2.64/4.50	2.14/4.00	2.10/3.85	2.18/3.70	2.24/3.78	2.29/3.85	1.79/3.15	1.29/2.45	0.98/2.01	0.67/1.57	0.62/1.44	0.57/1.30	0.60/1.19
New Orleans	3.72/6.50	4.54/6.95	5.37/7.40	4.90/7.08	4.44/6.75	3.78/6.12	3.11/5.50	2.55/4.81	1.99/4.12	2.34/4.40	2.69/4.67	2.96/4.92	3.24/5.17	3.36/5.28
New York	2.36/3.80	2.81/4.25	3.26/4.70	2.99/4.95	2.89/4.70	2.46/4.30	2.21/3.40	2.15/3.76	2.09/4.13	2.15/4.04	2.21/3.95	2.42/3.86	2.64/3.77	2.55/3.71
Philadelphia	2.69/4.10	2.94/4.24	3.19/4.37	2.99/4.91	2.79/5.45	2.44/4.62	2.09/3.90	2.04/3.85	1.99/3.80	2.18/3.65	2.36/3.50	2.50/3.70	2.64/3.90	2.60/3.80
Pittsburgh	2.86/4.20	2.79/4.35	2.72/4.50	2.52/4.15	2.32/3.80	2.20/3.30	1.87/2.80	1.98/3.00	2.09/3.20	1.96/2.96	1.84/2.72	1.96/3.00	2.09/3.27	2.12/3.20
St. Louis	2.79/5.30	2.60/4.78	2.41/4.25	2.28/4.18	2.14/4.11	2.12/3.84	2.09/3.58	1.89/3.42	1 69/3.25	1.78/3.28	1.86/3.30	1.70/3.05	1.64/2.80	1.52/2.75
San Francisco	0.00/0.05	0.00/0.03	0.00/0.01	0.00/0.00	0.00/0.00	0 00/0.13	0.00/0.26	0.10/0.73	0.19/1.20	1.12/2.25	1.04/3.30	1.62/4.28	2.19/5.25	2.34/5.12
Seattle	0.76/1.73	0.48/1.20	0.19/0.67	0.18/0.78	0.18/0.90	0.62/1.55	1.07/2.20	1.70/2.85	2.32/3.50	3.07/4.55	3.82/5.60	4.00/5.74	4.17/5.89	4.14/5.57

T—Traces (Less than 0.005 inches)

Mean temperature range in 20 cities, in degrees F.

Table shows range observed 25% of time. Mean temperature higher 37.5% of time, lower 37.5% of time.

Computed by U. S. Weather Bureau (based on historical records of actual temperature)

City	June	Mid June-Mid July	July	Mid July-Mid Aug.	Aug.	Mid Aug.-Mid Sept	Sept.*	Mid. Sept.-* Mid. Oct.	Oct.	Mid. Oct.-Mid. Nov.	Nov.	Mid Nov.-Mid Dec.	Dec.	Mid Dec.-Mid Jan.
Atlanta	77.3/78.1	78.5/79.3	79.0/79.9	78.9/79.9	78 6/79.1	76.3/78.1	72.9/75.4	68.2/70.2	62.3/63.8	56.6/58.2	51.1/52.7	46.6/48.4	44.0/46.0	48.3/50.3
Baltimore	72.5/73.8	75.2/76.6	76.2/77.5	75.5/77.3	73.6/75.7	71.1/73.3	67.1/69.4	62.2/64.4	56.4/58.3	50.9/52.6	45.6/47.0	40.2/42.0	35.8/37.8	34.2/36.1
Birmingham	76.8/78.1	78.4/79.7	78.9/80.0	79.0/80.3	78.5/79.8	76.6/78.5	73.3/75.6	68.5/70.7	62.2/64.2	56.2/58.5	50.7/53.2	46.5/48.9	44.3/46.5	43.4/46.1
Boston	66.3/68.1	69.6/71.1	70.2/74.1	72.1/73.4	70.9/72.1	67.6/69.2	63.3/65.4	58.9/61.0	54.2/56.2	49.3/51.3	43.6/45.6	36.8/39.2	31.2/34.0	28.9/31.9
Chicago	68.0/71.2	71.6/74.0	73.7/75.1	73.8/75.4	71.7/72.0	68.8/70.7	64.5/66.7	59.3/61.7	52.8/55.3	45.9/48.6	38.6/41.5	31.2/35.0	25.7/30.3	23.7/28.5
Cincinnati	71.2/73.0	73.4/75.2	74.1/75.8	73.9/75.7	72.5/74.4	70.2/72.1	66.5/68.4	61.2/63.3	55.9/57.1	48.6/50.9	42.0/44.5	35.9/39.1	31.4/35.2	30.1/34.4
Cleveland	68.2/70.2	71.2/73.0	72.7/74.2	72.5/74.2	70.9,72.7	68.5/70.6	64.7/67.1	59.5/61.8	53.5/55.6	47.1/49.3	40.5/42.7	34.3/37.2	29.3/32.9	27.3/30.9
Dallas	81.1/82.2	83.3/84.8	84.5/86.4	85.6/87.3	85.1/86.7	82.3/83.9	78.1/79.7	73.8/75.1	68.5/69.4	61.4/63.1	54.3/56.7	49.9/52.3	47.0/49.3	44.8/48.1
Denver	65.4/67.5	69.7/71.5	72.1/73.7	72.5/74.0	71.8/72.2	67.3/78.6	62.2/63.4	56.7/58.3	50.8/52.8	44 5/47.2	38.0/41.4	33.5/36.7	30.5/33.5	28.3/31.4
Detroit	67.3/69.9	70.6/72.1	72.5/73.5	72.3/73.6	71.0/72.5	67.5/69.5	63.0/65.6	57.8/60.2	51.9/54.1	45.8/47.9	39.2/41.1	32.9/35.3	27.9/30.9	25.6/28.5
Kansas City	74.2/76.0	78.0/79.6	80.0/81.5	80.2/81.8	78.4/80.1	74.6/76.6	69.7/71.9	64.4/67.0	58.1/61.2	50.7/53.9	42.6/45.9	36.7/40.1	32.4/35.9	30.4/33.0
Los Angeles	63.9/65.4	65.4/67.0	66.9/68.4	67.5/68.9	67.4/68.6	66.8/68.1	65.9/67.3	64.4/65.9	62.7/64.2	60.5/62.1	57.9/59.8	56.5/58.2	54.9/56.5	53.4/54.8
Minneapolis	66.6/69.1	70.3/72.5	72.9/74.9	73.2/75.0	70.8/72.3	66.3/68.4	61.0/63.6	55.5/58.3	49.8/51.7	40.4/44.5	30.9/36.0	24.5/28.1	17.2/22.3	13.8/18.4
New Orleans	79.9/80.9	81.0/81.9	81.4/82.3	81.8/82.7	81.8/82.7	80.8/81.9	78.5/79.7	75.1/76.5	70.5/71.9	64.6/66.8	59.0/61.5	56.0/58.5	54.6/56.8	53.2/56.0
New York	70.4/72.2	73.6/75.0	75.2/76.3	75.1/76.3	73.6/74.9	71.0/72.5	67.4/69.0	62.7/64.3	57.0/58.6	51.8/53.2	46.5/47.9	40.2/42.3	34.6/37.5	34.5/35.2
Philadelphia	71.5/73.1	74.1/75.4	75.8/76.6	75.1/76.3	74.5/73.3	72.1/70.6	66.8/68.5	61.6/63.5	55.6/57.6	50.3/52.3	45.3/47.2	39.9/42.0	35.1/37.3	32.7/35.4
Pittsburgh	67.4/69.7	70.2/72.0	71.4/72.8	71.0/72.4	69.3/70.9	67.2/68.9	64.0/65.9	58.8/60.9	52.0/54.4	46.2/48.2	40.3/42.0	34.0/36.4	29.5/32.6	24.8/28.0
St. Louis	73.5/76.2	76.9/79.0	78.7/80.2	78.5/80.1	76.7/78.5	73.6/75.6	69.1/71.2	64.0/66.3	58.1/60.5	51.0/53.9	43.6/46.9	37.6/41.2	33.3/37.1	30.9/35.1
San Francisco	58.8/60.5	59.6/61.0	59.7/60.9	59.5/60.7	60.1/61.2	60.9/62.2	61.3/62.8	60.4/62.0	58.5/60.2	56.4/57.9	53.8/55.0	50.7/52.3	48.7/50.2	47.1/48.9
Seattle	59.3/60.4	61.7/62.7	63.6/64.6	63.8/65.0	62.7/64 1	60.8/62.0	58.0/59.0	54.8/56.1	51.0/52.5	41.8/43.8	43.1/44.5	41.0/42.4	39.4/40.7	37.7/39.0

* Ranges for Sept. and Mid. Sept.-Mid. Oct. published March 24 issue for all cities except Baltimore, Cleveland and Philadelphia were actually for Oct. and Mid. Oct.-Mid. Nov. respectively. Correct ranges for these 30-day periods are shown here.

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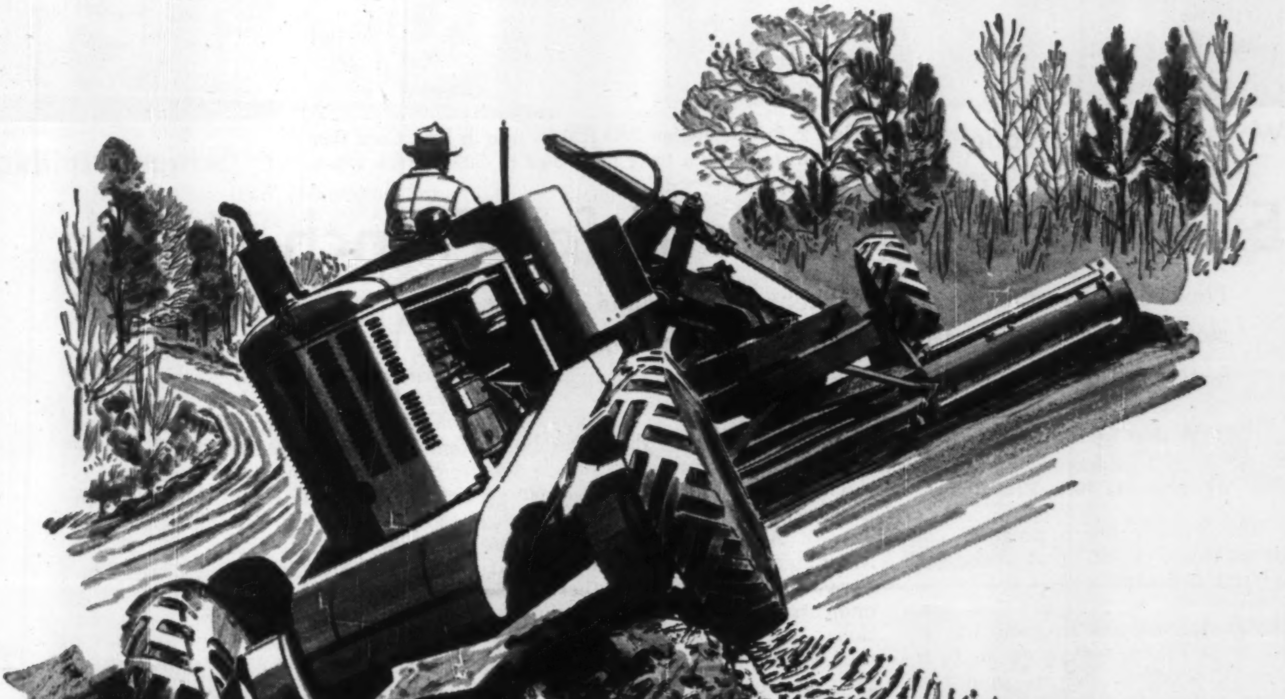

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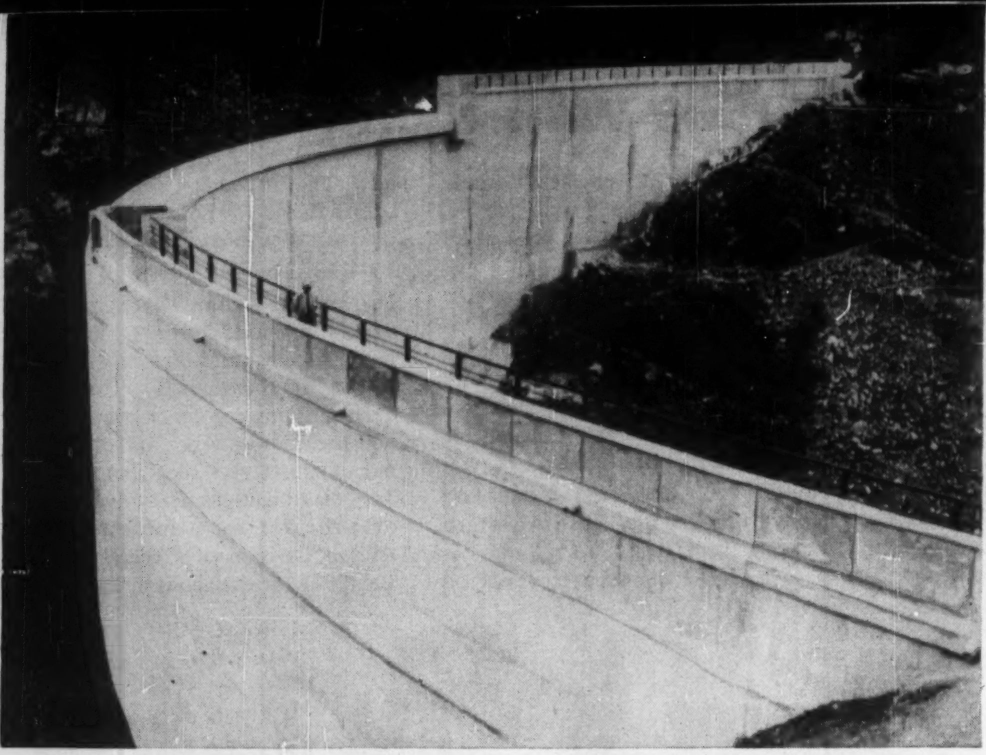

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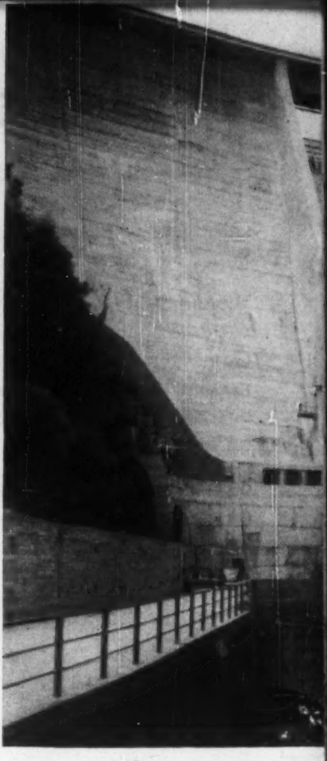


Ski-jump spillways

Exciting Is the Word for French Hydro

New designs and bold experimentation abound despite slowdown in postwar program of French dam construction —Inspection tour impresses experts from around the world

Waldo G. Bowman
Editor
Engineering News-Record

The French hydro program continues to add projects that arouse both interest and admiration.

Since the war, France has practically doubled its hydroelectric capacity in an intensive program to reduce dependence on imported coal. Now, with a better hydro-steam balance established, emphasis has shifted to steam and boilers fired by slimes and coal washings brought from the mines by pipeline.

But despite this shift in emphasis (a 35% increase in hydro as compared with 65% increase in steam is envisioned for the period 1954-57) French hydro projects continue to display the exciting French touch.

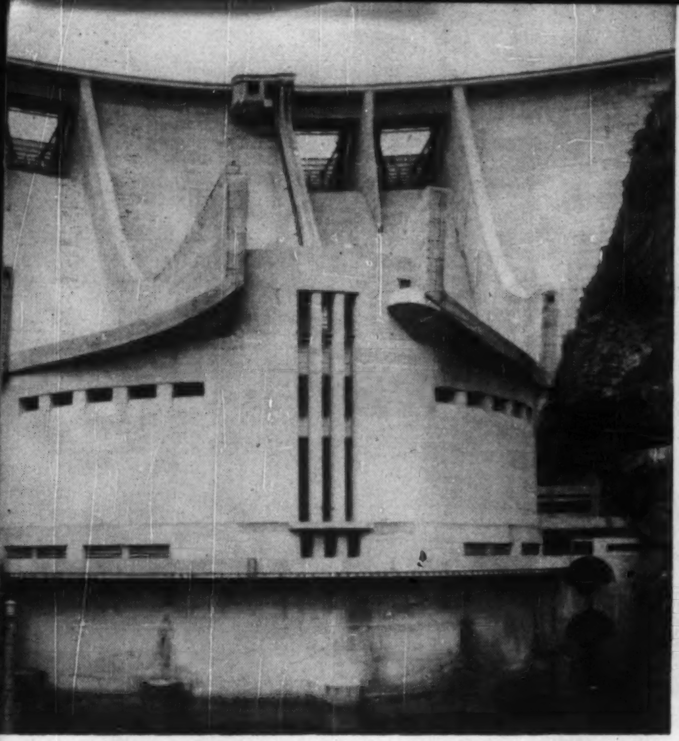
This was the impression of some 300 of the 800 delegates to the International Congress on Large Dams, meeting in Paris May 31-June 4, who chose to make a study tour of French hydro projects as a sort of conditioning exercise for the formal technical sessions that were to follow. Traveling in special trains by night and by bus in the daytime, these visiting experts saw such outstanding developments as the thinnest arch dam ever built, submersible turbine-generator sets destined for use in a great tidal power plant on the Atlantic coast, a diversion of Atlantic slope water to the Mediterranean basin, underground power plants—and many other developments which, even though conventional, were given, more often than not, some special feature that made them exciting.

In the 1,250 miles covered on this tour of inspection there was ample opportunity also to observe what France has accomplished since the war in other than the hydroelectric field, on which the main interest was focused. On the broader economic front, to mention only a few of the economic signs: steel and cement mills were seen to be at high operating levels; cement production, 3.4 million tons in 1946, is nearly three times that today; steel at 4.4 million tons has also nearly tripled since 1946. Housing, too, is on the march: some 200,000 units were completed in 1954, as compared with only 80,000 two years earlier.

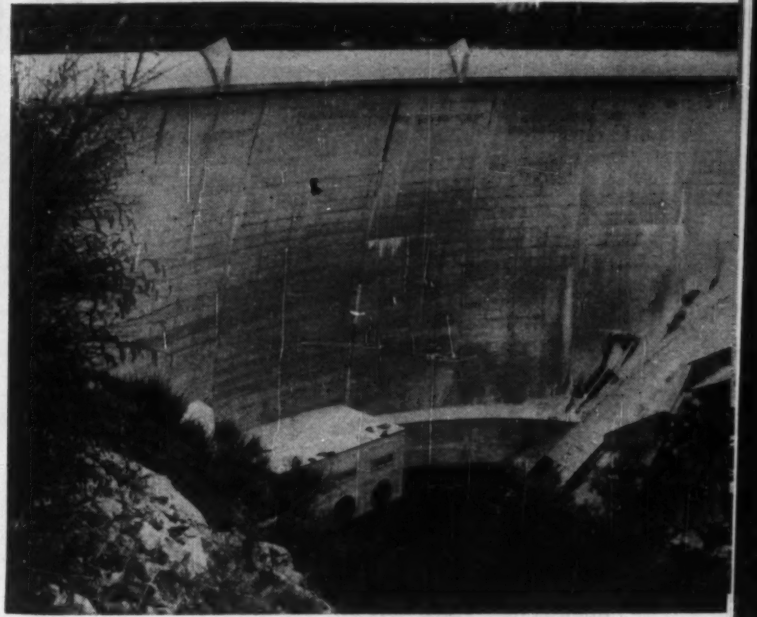
Power production figures furnish a good yardstick of French advance. In 1946 France turned out 23 billion kwh, of which about one-third was hydro and two-thirds steam, whereas in 1954 the output was 45 billion kwh, half of which was hydro. On a part of their travels, the visitors utilized some of this additional energy on the newly electrified railway lines, and they witnessed where more is coming from when they passed parts of a 435-mile, 12-in. pipeline that will soon be bringing gas from the Saar-Lorraine region to Paris.

But mostly their interest was centered on the results of hydroelectric development since the war. In that period, France has:

- Virtually completed the development of one of its great power rivers, the Dordogne, with four dams featuring ski-jump spillways among other innovations.
- Produced, at two dams, 3.6 billion kwh of a potential 14 billion kwh in its greatest power source, the Rhone, and has another 1.67 billion kwh on the way with another dam.
- Completed on the Upper Rhine (where 6 billion kwh annually can be produced from eight power sites totaling a 350-ft drop along the Grand Alsace Canal) one station with a 906,000 kwh yearly production, and put under construction another to produce 960,000 kwh.
- Completed in the Alps at Tignes the highest concrete dam in Europe as the basic unit in the utilization of Isere River.
- Set a new world record in the Pyrenees for power capacity in the



Spectacular ski-jumps twist sheet of spilling water, throwing it high and far, off roof of semicircular powerhouse at L'Aigle, also at Chastang and Bort.



An overhanging arch Leaning downstream and overhanging its powerhouse, Couesque Dam is second of its type in France. Fins on crest prevent vacuum under spilling water. See also drawing on p. 41.

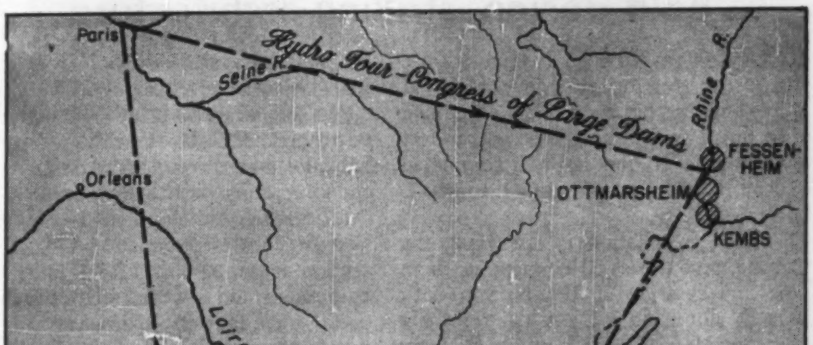
high head class—two 109,000-hp turbines operating under a 3,687-ft head—on Pragneres-Cap de Long project.

- Started development of the Durance River in the southeast part of the country, where only 10% of a potential 10.8 billion kwh is now being produced. Here France is undertaking its first earthfill dam, at Serre Poncon, and has planning under way on the lower river for diversion of virtually the entire flow of the stream into a great irrigation canal on which five power dam sites have been picked.

Most of these developments were visited by the touring engineers, and it is the purpose of this report to record those features of each which aroused the most interest and excitement.

- **The Rhine development**—Conceived over 50 years ago as a navigation improvement to permit Rhine traffic to bypass the difficult reach between Strasbourg and the Swiss port of Basle, the Grand Alsace Canal remained a dream until after the first World War, when German reparations provided the money for the first locks and dam at Kembs at the upper end. The low-head power plant built in connection with that dam, capable of turning out 558,000 kwh annually, has been functioning since 1932.

Seven similar lock-dam-power-plant installations are planned at about 10-mile intervals to complete the development, which in total will utilize a 350-ft head. The first and next downstream from Kembs was built at


Paris
Hydro Tour–Congress of Large Dams
Seine R.
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Isere R.
Grenoble
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Truyere R.
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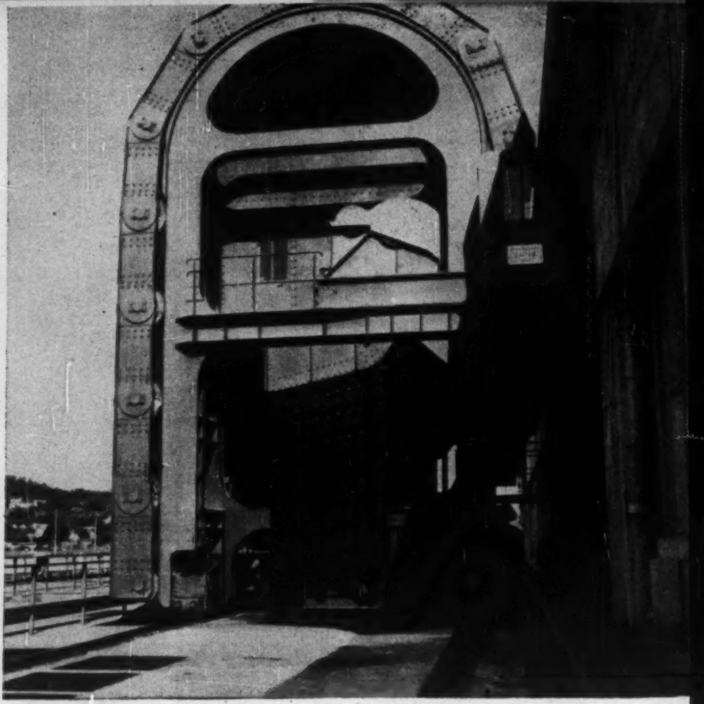
Drac R.
Lot R.
MONTELIMAR
SERRE-PONCON
Ardeche R.
DONZERE-MONDRAGON
Cahors
Pouget
Tarn R.
Millau
Durance R.
LOWER DURANCE
Toulouse
0 25 50
Scale in Miles
Marseille
MEDITERRANEAN SEA

INSPECTION TOUR OF FRENCH HYDRO PLANTS was impressive conditioner for delegates to the International Congress on Large Dams in Paris early this month.

"ROCK PICTURES"—Architecture can be striking, even underground, as evidenced by Montpezat powerhouse, where ceiling is black, machines red and yellow.



"WRAP-AROUND" GATE—Articulated safety gate is wound on track-mounted carriage at Donzere powerhouse. It can be moved to any one of six turbine openings to close off the unit.

. . . Bold design, striking architecture

Ottmarsheim between 1948 and 1952, and construction of the second, at Fessenheim, began in 1953, scheduled to finish in 1956. Thus the visitors were able to see both a completed project and one still under construction.

Each installation is essentially the same, and the canal connecting them is 265 ft wide at the bottom with bank slopes of 3:1. A pair of locks is provided at each dam, both locks 610 ft long, but with widths respectively 76 and 39 ft. Purpose of the smaller width is to permit rapid locking of the large freight-carrying tugs, whose use has been growing on the Rhine.

The locks have a lift of about 50 ft., approximately the same as the head under which the power plants are to operate to produce 906,000 kwh annually at Ottmarsheim and 960,000 kwh at Fessenheim. Each installation involves about 27 million cu yd of excavation and 900,000 cu yd of concrete. At Fessenheim about half the excavation and a quarter of the concreting has been done.

French Dam Articles in ENR

- Genissiat — Western Europe's Biggest Power Dam—ENR June 24, 1948, page 82.
- Frances' Push for Kilowatts Pays Off—ENR April 5, 1951, page 36.
- French Touch on Dams—Bort, L'Aigle and Chastang—ENR May 10, 1951.
- Renaissance on the Rhone—Donzere-Mondragon—ENR Nov. 22, 1951, page 30.
- Europe's Tallest Dam Rises in French Alps—Tignes—ENR Dec. 13, 1951.

The Rhine development is notable as a large-scale construction job, each section requiring many large units of equipment and a work force of about 3,000 men, but its hydroelectric elements are entirely conventional. The parts of the canal now completed carry 5 million tons of shipping annually, and the total hydro production will reach 6 billion kwh when all eight plants are operating, so that economically the development is of major imfortance not only to France but to all of the Rhine region from Switzerland to Holland.

• High Dam in the Alps—At Tignes, at 6,000 ft elevation in the Alps at the base of the glaciers feeding the Isere River, the visiting engineers were treated to the sight of the highest dam yet completed in Europe. A concrete arch rises 594 ft above its foundations and 572 ft above the ground. With a base 43 ft thick, it contains 820,000 cu yd of concrete. Its design and construction have been covered previously (ENR Dec. 13, 1951, p. 30) as were the two power plants that its reservoir feeds—one at the base of the dam and the other at the foot of a 9-mile tunnel—but a few of the project's features are worth re-emphasis:

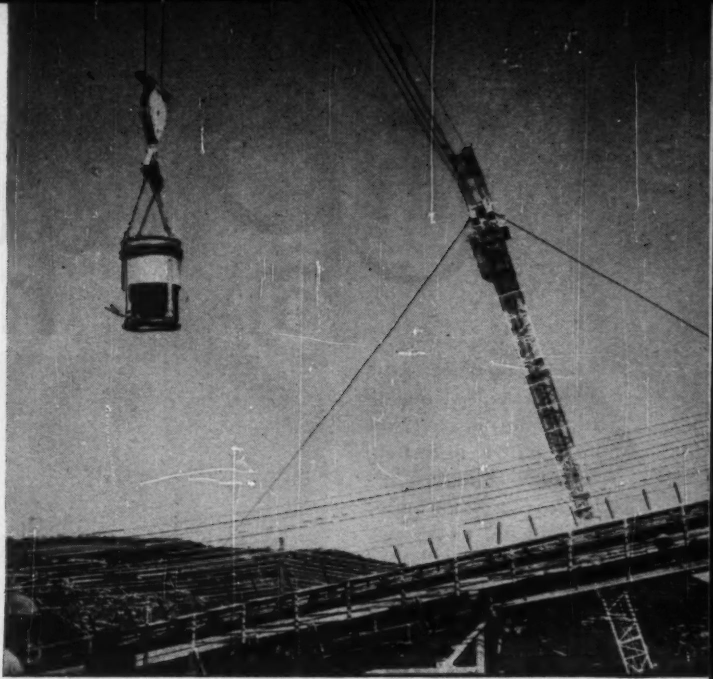
Water accumulated in the reservoir from the melting glaciers is held for power production during the peak period of the following winter when 830,000 kwh can be produced.

The lower power station, Malgovert, operates under a 2,475-ft head. Its steel penstocks have hoops of twisted wire rope at the upper end and of forged steel bands at the lower. Its four power units each consist of an 80,000 kva generator between two double-jet Pelton turbines.

• Another big dam on the Rhone—The Rhone has all the Rhine's navigation and power uses—with irrigation as an added third objective. Visiting engineers could inspect on the Rhone a project under construction, and then only a few miles away see a duplicate of the installation completed and in operation. The completed project is Donzere-Mondragon, and the one under construction, just upstream, is Montelimar. Donzere is producing 2 billion kwh annually, and Montelimar's production is set at 1.67 billion, beginning about the end of 1957.

With completion of Montelimar there will be three large power dams on the Rhone capable of turning out 5.27 billion kwh of the 14 billion estimated to be available from this great river of large sustained flow and steep gradient. The first dam, Genissiat (ENR June 24, 1948, p. 82), located near the head of the river, is a concrete gravity structure 343 ft high, put in service in 1948. The second, Donzere-Mondragon (ENR Nov. 22, 1951, p. 30), is a low-head

CURVES AND COLOR—Chastang powerhouse built into the base of its dam, is semicircular, and it is gayly painted in yellow, red, white and blue.



TILTED CABLEWAY TOWER on construction of Montelimar Dam leans upstream and down with guy-line control, rather than being vertical and rail-mounted for movement.

(77 ft) installation) far downstream in a navigation and irrigation canal bypassing rapids in the river.

Between these two are most of the 18 other damsites scheduled for development, Montelimar being the first of four to be built in the reach northward to where the Isere joins the Rhone. Five practically duplicate installations (Donzere, Montelimar and the three others) will have an aggregate production of 6.9 billion kwh, so that with Genissiat they will account for 60% of the potential in the river.

Briefly described, since it is like Donzere-Mondragon already covered in these pages (see reference above) the Montelimar project consists of a diversion dam across the Rhone, a 7.2 mile canal (65,000 cfs, 528 ft wide and 33 ft deep) and a combination dam, power plant and lock across the lower end of the canal. The power plant will contain six 45,000-kw generators operated by Kaplan turbines under a 63-ft head. The lock will be 644 ft long, with a single lift of 63 ft, as compared to the 86 ft at Donzere, which is exceeded only by the lock at McNary Dam in the U. S.

Construction at Montelimar will require 26 million cu yd of excavation and 910,000 cu yd of concrete. A feature of concreting work on both Montelimar dams is the use of cableways with guyed single-leg towers, which are tilted by adjusting the guys to cover all of the site—a contrast to the more usual tail-tower mounted on rails.

Visitors to these Rhone River plants were also treated to an impressive sight in the architecture of the Donzere powerhouse: its roof elements suggest a series of Greek temples and its walls a Byzantine ancestry, by virtue of concrete grillwork which creates a striking pattern of daylight in the great generator room (624 ft long and extending upward over 100 ft). Another impressive feature of the power plant is an articulated safety gate, mounted on rails so that it can move to the location of any one of the six turbines and shut off the flow of water in case of accident. The gate element is 59x57 ft, and the entire mechanism weighs 630 tons. It can close off a turbine opening in about 3 minutes.

• First earthfill dam—Below these power sites on the main stem of the Rhone, that is from Avignon to the sea near Marseille, there is only one way to squeeze out more kilowatts: develop one of its tributaries, the Durance. And on this sizeable enterprise France has now embarked. It will be carried out by the national power authority, Electricite de France, which is in charge of all hydro work in the country except that on the Rhone itself, responsibility of the special, publicly owned Compagnie Nationale de Rhone.

On the way to a study of the Durance, the visitors passed by construction operations for a 250-ft high concrete arch dam and an underground power station at St. Pierre–Cognet on the Drac, another Rhone tributary, where some 270,000 kwh a year should be coming off the line starting at the end of 1956. But the objective was the upper end of the Durance where France will undertake its first earthfill dam at Serre Poncon.

The Durance basin and particularly the Durance itself represents one of the country's principal undeveloped power sources. A few old and small plants turn out about 1 billion kwh annually, but there is estimated to be 15 billion available, of which 10 billion are on the main river. A dam near Serre Poncon has long been recognized as the necessary first step, but with the focus on a concrete structure, a satisfactory site could not be found. Finally, influenced by the success with earthfill dams in the U.S. and elsewhere, French engineers turned to such a structure as the solution. With that hurdle passed both the site and the available materials were found to be ideal.

The Serre Poncon damsite is a rock-walled gorge filled with a granular alluvium to a depth of over 300 ft, but capable of carrying heavy loads and lacking only in watertightness. The site is made further advantageous by two promontories of sound rock which extend out from either bank and can be incorporated into the dam.

Present work at the site consists of exploratory tunnels into the canyon walls and grout testing of the alluvium bed. From these studies it has been determined that the body of the dam will be made up of the amply-available granular alluvium compacted on both sides of a water-tight core of clay material from a nearby deposit,

(*Continued on page 40*)

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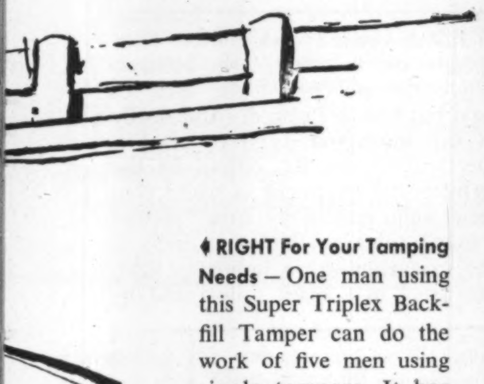

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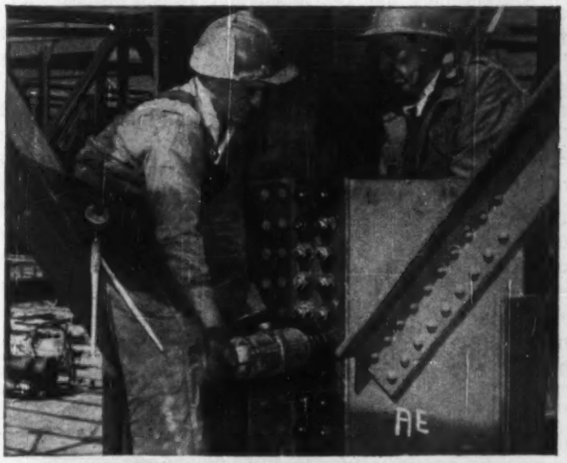

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and that the foundation material will be made impermeable by the injection of a mixture of liquid clay and slag-cement mortar, which is also deemed to be resistant to the action of the calcium sulphate that studies show to be present in the underground waters.

Serre Poncon dam will have a volume of 18 million cu yd. It will be 402 ft high above the river bed and approximately 2,000 ft thick at the base. The power plant will be underground in the rock of the left bank, and will contain four 90,000-kva generators capable of producing 700,000 kwh annually.

The great importance of Serre Poncon dam in the development of the Durance lies in its control function through the large upstream storage of its reservoir. It will permit a normal feeding of the irrigation canals along the lower river and, subsequently, its releases will operate the lower river power plants.

• New outlet to the sea—These lower river plants will not, however, be on the present course of the Durance, but on a canal, which will in effect redirect the river to the sea. As envisioned (it is only in the planning stage) this canal will be about 50 miles long, the first 30 miles running parallel to the south bank of the river, from east to west, and the last 20 miles, running from north to south, to discharge into the Etangde Berre, a lagoon west of Marseille and an inlet of the Mediterranean Sea. Designed for a flow of 8,500 cfs (approximately the same as the mean flow of the Durance) over a total drop of 735 ft, the canal would be equipped with five power plants having a total capacity of 525,000 kw and an annual production of 2.3 billion kwh.

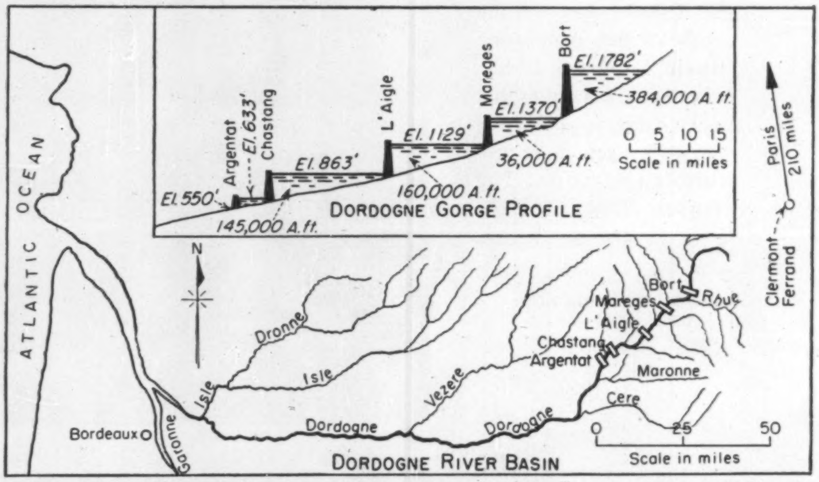
If the total Durance development can be carried out, and it could readily require 25 years, it is estimated that over 10 billion kwh of power could be added to French hydro electric production.

• Atlantic-to-Mediterranean diversion — The Massif Centrale, mountains dividing the Rhone River system from streams flowing west to the Atlantic, provides made-to-order topography for trans-mountain diversion of water for power purposes. The outstanding example involves the Loire (France's longest river, which empties into the Atlantic Ocean) and the Ardeche, which joins the Rhone and is thus carried to the Mediterranean Sea. France has completed recently the Montpezat power project to take advantage of this diversion in a layout favored by the presence of a natural storage reservoir, Lake Issarles. This old volcano crater is at such elevation as to furnish a 3,000-ft head to a power plant located on the Fontauliere, a tributary of the Ardeche.

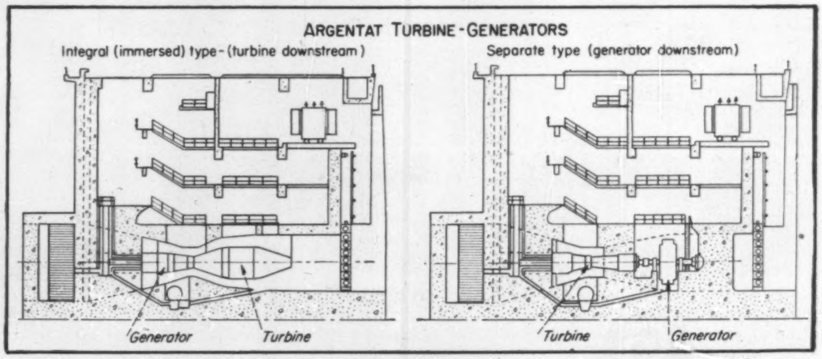
The Montpezat project consists of Lake Issarles, which is fed through tunnels from reservoirs on tributaries of the Loire; an 11-mile tunnel from the lake under the divide to an underground surge chamber above the power plant; a 6.6-ft diam penstock tunnel 4,400 ft long; and an underground power plant 200 ft below the river bed, equipped with three 35,000-kw generators capable of furnishing an average of 360 million kwh annually. There is also a tailrace tunnel 8,250 ft long to lead the waters into the Fontauliere and thence to the Ardeche, Rhone and the Mediterranean.

In operation of this system, waters from the three Loire tributaries can be discharged directly into the feeder conduit into Lake Issarles and thence into the conduit, depending on the relation of available supplies to turbine requirements.

Despite its intrinsic interest as an ingenious power setup, Montpezat offered the visiting engineers even greater food for thought in two of its details: (1) the construction methods used in tunneling the feeder conduit into the bottom of Lake Issarles and (2) design of the dam on the Gage River, a world's record for thin arches achieved by using double the normal working stresses in design. In addition they were impressed by the means of access to the underground power plant—a funicular railway 900 ft long on a 55% slope. One car for personnel and loads up to 3 tons operates at 100 to 200 ft a minute, and another capable of carrying loads up to 135 tons runs 10 ft a minute. They operate on two cog lines between which the trolleys, in the form of rigid bus bars, are placed. And finally in the underground power plant a spectacular scene was offered by the architectural treatment — white concrete walls pierced by large "picture frames" exposing the rough rock of the excavation—by a luminous lighting panel in a black ceiling and by



A SERIES OF SKI-JUMPS, the major Dordogne River Dams are a triumph in French dam design. And now, little Argentat Dam for reregulation will have a distinction all its own—immersed, horizontal turbine-generator units.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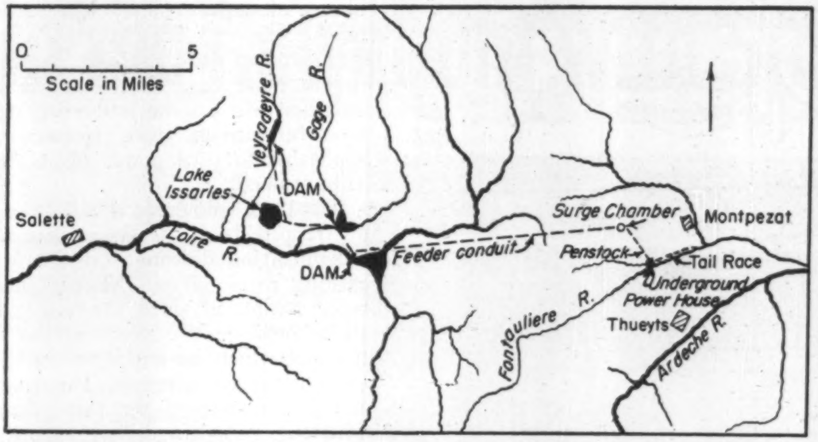
Generator
Turbine
Turbine
Generator

EXPERIMENTAL TURBINE-GENERATORS will be tested for use as tidal power units at small Argentat Dam on the Dordogne. These are to be studied for use in planned tidal station near Atlantic on Rance River.



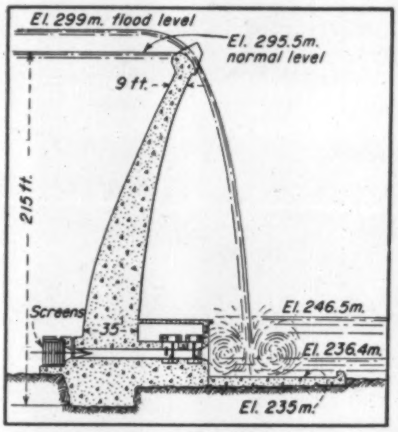
A PROJECT PACKED WITH INTEREST! An Atlantic-Mediterranean diversion; the world's thinnest dam; tunneling into a lake; a steep funicular railway to an underground powerhouse; and picture-windows underground.

generators and other equipment painted in bright yellows and reds.

• Tunneling into a lake—Faced with the task of bringing the Montpezat feeder tunnel into Lake Issarles 165 ft below its water surface the French engineers discarded the idea of first pumping the lake down in favor of driving the tunnel close to the lake and then blasting out the remaining plug. Unusually careful exploration by drill holes and elaborate grouting of the granite rock ahead of tunneling permitted operations to proceed to within about 3 ft of the lake before the plug was blasted.

The hazardous operation was carried out with complete success and effected a saving of about $100,000 over emptying the lake entirely by pumping. Actually, some pumping was used since it was deemed advisable not to break through at the exact level of the permanent outlet. Thus, the last 100 ft of the tunnel was driven on an upward slope that reached the lake 40 ft above the outlet location. After the lake had drained down to this level, this last 40 ft was removed by pumping, and a new section driven through at the lower level.

• Thinnest arch dam—When damming of the Gage River for the Montpezat project offered a favorable opportunity for a daring concrete arch, Raymond Giguet, technical director of EDF, grasped the chance of some experimentation and turned the project over to Andre Coyne, France's top dam consultant. Mr. Coyne had designed a number of EDF's concrete dams including those on the Dordogne with the ski-jump spillways. As a result, Gage Dam is the thinnest concrete arch dam ever built, recalling on a larger scale the experimental Stevenson Creek Dam of three decades ago in the U. S.



OVERHANGING DAM (Couesque on the Truyare) has weight of water adding to its stability, spills below powerhouse.

The Gage Dam is 125 ft high and 472 ft long at the crest, 218 ft of which is used for a spillway. It is 4.3 ft thick at the top and 7.88 ft thick about 8 ft above the base. At the very base its thickness is 12.5 ft. The radius of curvature of the upstream wall is 203.5 ft, and the angle subtended by the upper arc is 126 deg. The dam contains a total of 6,500 cu yd of concrete.

These unusual proportions for a concrete arch result from use in the design of average stresses of 1,422 psi (100 kg per cm), more than twice that yet used in a dam of this type. When Mr. Coyne designed Mareges Dam about 25 years ago, he used an average stress figure of 356 psi. On the other dam on the Montpezat project, that on the Loire River which is also an arch, he used 640 psi, and two other dams in France have used higher stresses, up to 680 psi. But progress in liberalizing arch dam stresses has been slow.

On design of the Gage Dam the real problem arose in dealing with theoretical flexural stresses in the vertical brackets, or sections into which the structure was divided. Although it was believed possible to carry these stresses in the unreinforced concrete, it was decided to use some vertical reinforcing in the most highly stressed portions. Accordingly 35 tons of hard-steel deformed bars were used in the upstream face and 25 tons in the downstream face.

The dam was completed a year ago, and the reservoir has been filled and emptied. A mass of data was collected by triangulation measurements and by vibrating-cord extensometers. None of the observed deformations has been greater than expected; stresses have been below those calculated. With the stress indicated to be between 1,070 and 1,210 psi, the margin of safety with respect to the crushing strength of the concrete (4,280 psi after 90 days) is regarded as ample.

Although Gage Dam might not have been a success, it is now regarded as a completely useful structure as well as a successful experimental one.

• An overhanging arch dam—With Gage Dam still fresh in their minds, the touring engineers next encountered another special type at Couesque—an arch which, instead of being vertical, is inclined downstream. Its shape results from piling on top of one another arch sections with a central angle of about 120 deg (which research has shown to be the optimum angle). Downstream inclination of the dam's axis assures stability and also aids in sealing the horizontal construction joints under weight of water stored. France has two such dams, Couesque on the Truyere River and Enchanet on the Maronne. The type is said to have originated in Italy.

Couesque Dam is 215 ft high, and its crest length is 575 ft, all available as a spillway. But the crest has dividing projections to prevent development of vacuum effect between the face of the dam and any solid overflowing sheet of water. At the top of the dam the arch angle is 114 deg and at the bottom 111 deg. The concrete volume is 100,000 cu yd, claimed to be 20% less than would be required for a conventional arch dam.

Couesque Dam completes the power development of the Truyere, which was begun over 20 years ago when Brommat Dam was completed, with one of the very earliest underground power plants.

• Turbines for tidal power—Just as Couesque completed development of the Truyere so will Argentat Dam, now under construction, complete power development of the Dordogne. But Argentat is by far more important,

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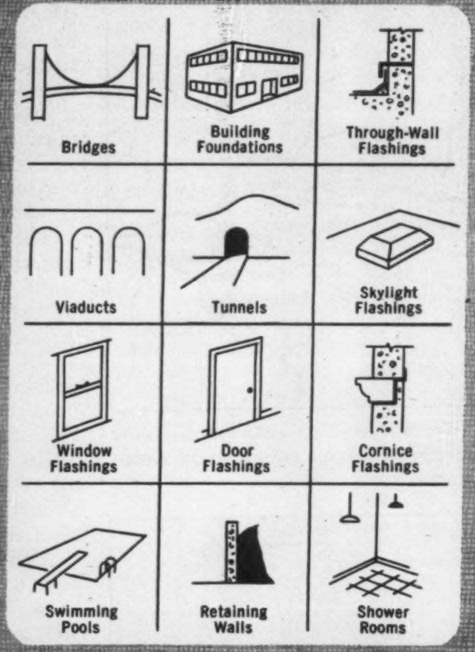

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first because the Dordogne is one of France's great power rivers where some of the country's most notable dams are situated and second because Argentat has been chosen as the installation where some interesting new type turbine-generators, foreseen as applicable to tidal power plants, are to be studied.

The Dordogne gorge is now a series of stepped lakes, as shown on the accompanying drawing. Of the four existing dams, all but Mareges have been completed since the war, and all incorporate ski jump spillways—three of which are supported on the roofs of the powerhouses. The design and construction of the three dams, Chastang, L'Aigle and Bort, have previously been presented in an article in these pages, "The French Touch in Dams" (ENR May 10, 1951, p. 28). Providing some 2 billion kwh of power, they are particularly important in the French electrical grid because they store water during the summer to be used for power from October to March, when power plants depending on Alpine waters are largely off the line.

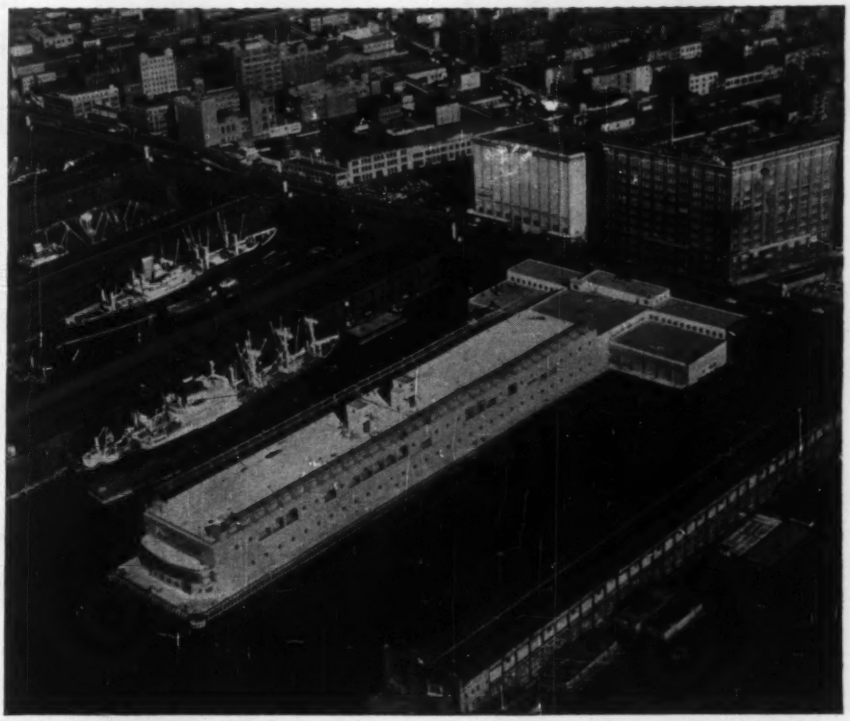
Up to the present, downstream water supplies have had to be geared to releases from Chastang reservoir, which follow power production requirements and are therefore irregular. The purpose of Argentat Dam is to provide a storage reservoir not controlled by power, from which water can be released as it is needed downstream. It is a small dam, only 50 ft high and 625 ft long, and is of gravity type with alternate blocks devoted to spillways and four turbine-generator locations. Only two sets of power equipment will be installed initially, but each of them is of commanding interest.

France is actively studying—in the laboratory, in the design office and in the field—a great tidal power plant to be located on the Rance River which empties into the Atlantic via Mont Saint Michel Bay near St. Malo. There is considerable present confidence that construction of this plant will soon be under way, and in the meantime it is necessary to decide on the type of power units to be installed. Argentat has been selected as the site for final studies.

Very little information is yet available on the mechanical and electrical details of the turbine-generators. However, the accompanying sketches show that they can be classified as of the horizontal type, that they are placed in the line of flow of the water and that, related to conventional types, they are compact and small. It is claimed that for the same rated capacity these units weigh only one-

(*Continued on page 46*)

On the Newsfront with Structural Steel



NEW YORK'S MOST MODERN MARINE TERMINAL—This $12 million steel-and-concrete structure, Pier 57, is New York City's most modern marine terminal. More than 470,000 sq ft of usable space is provided, including two upper decks, accessible to trucks by ramps, and a huge underwater cargo area, reached by elevators. The roof can be used for the storage of automobiles, and is also designed as a helicopter landing area. Over 4700 tons of Bethlehem Structural Shapes were used in the construction.

Architect: Madigan-Hyland; *General Contractor:* Corbetta Construction Co.; *Steel Fabricator:* Harris Structural Steel Co., Inc., all of New York City.

NEW PIER IN EAST BOSTON HARBOR—Shown at left under construction is Pier 1 in East Boston Harbor. This $9½ million marine terminal and warehouse is 340 ft by 580 ft, and contains over 1600 tons of Bethlehem Structural Shapes. Besides regular pier facilities and tremendous storage capacity, the warehouse contains facilities for pumping liquid cargoes directly from ship to tank car.

Architects and Engineers: Fay, Spofford and Thorndike, Boston; *General Contractor (Superstructure):* Thomas O'Connor and Co., Inc., also of Boston, who also erected the steelwork; *Steel Fabricator:* West End Iron Works, Cambridge, Mass.

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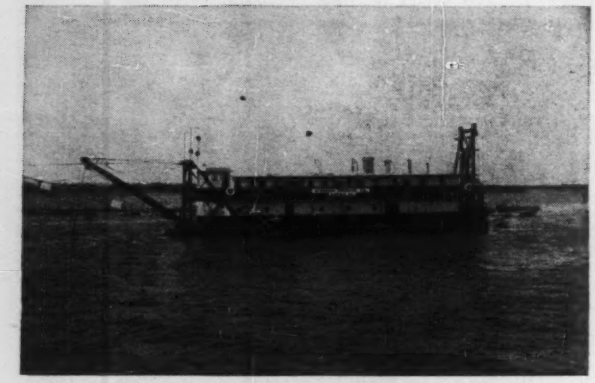
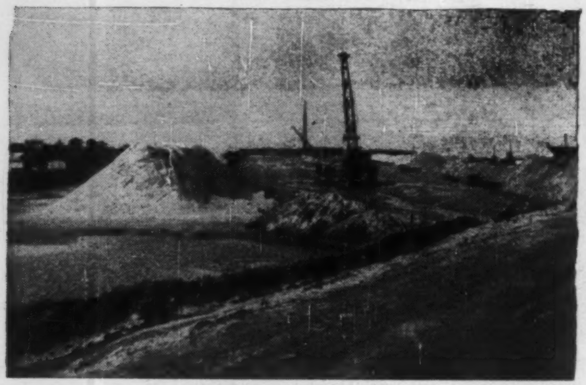
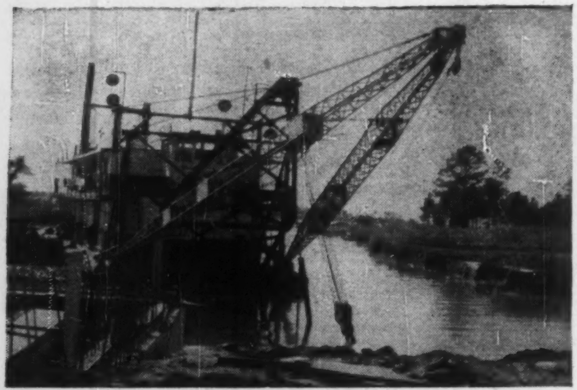


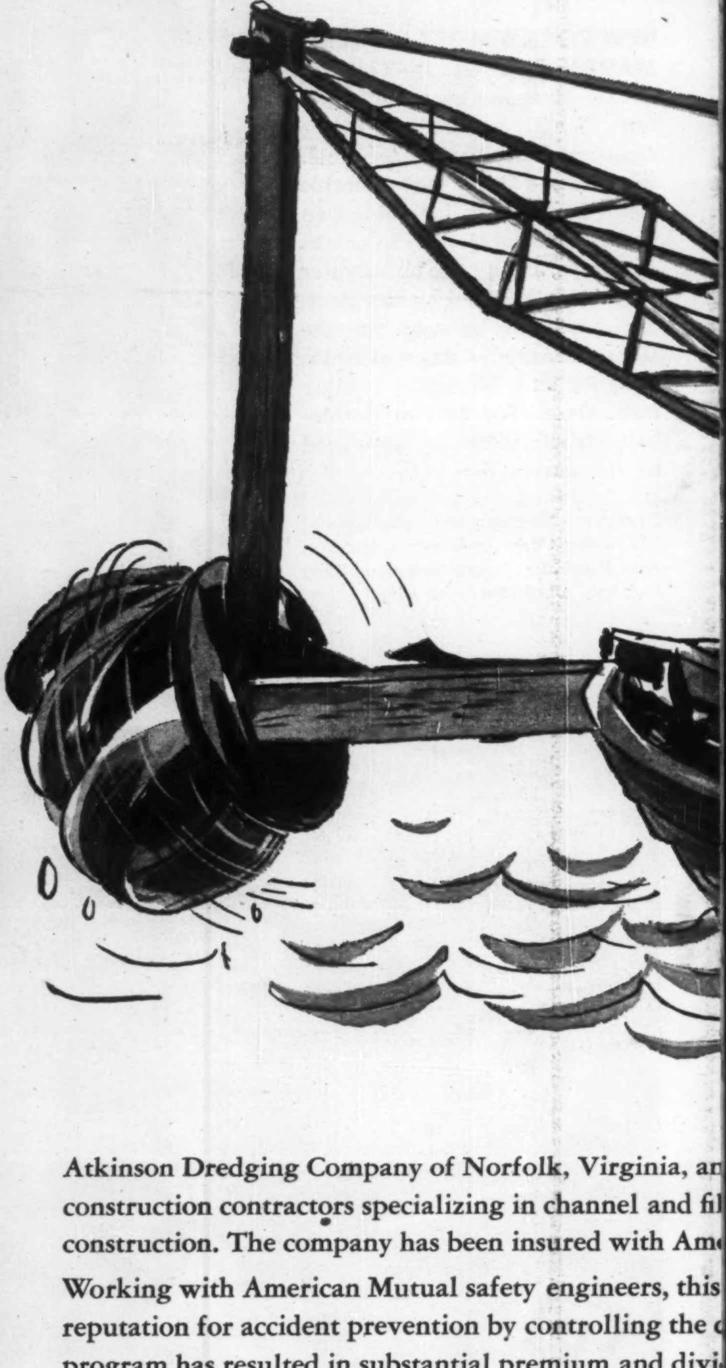
1. Atkinson Dredging Company keeps its equipment in A-1 condition for safe operation. Here the company's Dredge "Northwood" is working in Cape Fear River removing 1,000,000 cubic yards of material.



2. Every job, regardless of size, calls for safety planning. Here Atkinson is constructing approaches for the Chesapeake Bay Bridge across Kent Island to the mainland in Maryland.



3. Personnel work constantly with heavy equipment and are taught to use it safely. The equipment here is dredging an intake channel and placing fill for Georgia Power Company's McManus Plant, Crispin Island, Ga.



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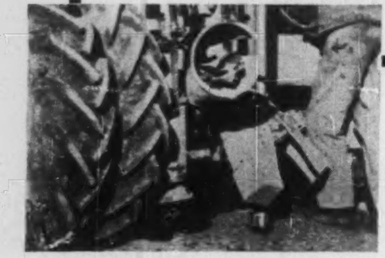

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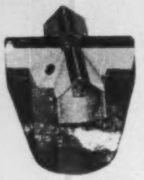

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quarter as much as conventional units. One object in their design is to permit their installation or removal for repairs in a matter of hours, another is to cut down the size and cost of the powerhouse.

One of the units, which somewhat resembles a torpedo, contains the turbine and generator in the same housing, which is completely immersed in the water. The turbine is in the downstream portion of the housing, with the generator behind it and enclosed in a secondary housing. Water flows around this housing to reach the turbine and in so doing keeps the generator cool. This cooling process is aided by the fact that the generator operates in a bath of oil, which picks up the heat and transfers it to the cool walls of the housing. This type of turbine generator has been called the "bulb immersed type," a "monobloc" and simply a "hydrogenerator," and one of its other interesting possibilities for tidal power stations is that it can also operate in reverse as a pump.

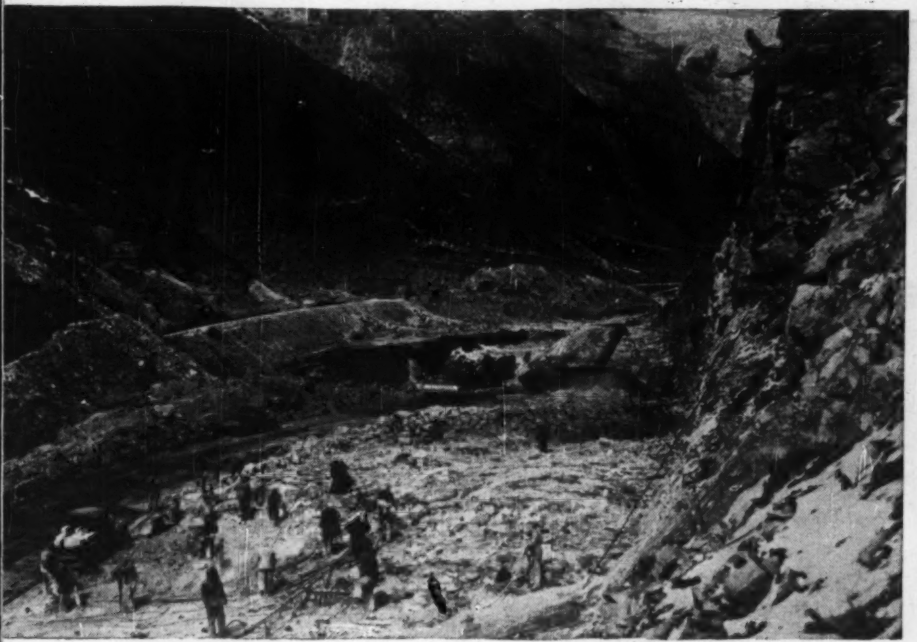
The second type of power unit to be installed at Argentat separates the turbine and generator in more conventional manner, placing the turbine upstream and the generator below, but it is also compact and of light total weight.

For a tidal power station, or for low-head installations on rivers, it is contemplated that a large number of these units would be placed side by side—as many as 26 have been talked of for the Mont Saint Michel Bay tidal installation.

• Spectacular finish—Appropriately, the study tour ended by visits to the completed projects on the Dordogne, where the end result of the dam building art could be viewed. And at few places in the world could this result be better appreciated, for the dams and powerplants on the Dordogne represent the acme of French practice.

The power stations at Chastang and at L'Aigle are semicircular in plan and integral with the base of the dams. The Bort station, although conventionally rectangular, is similarly situated, and at all three stations the spillways pass over the roofs and discharge high in the air like a ski jump.

After being given a view of the gaily painted and ingeniously lighted generator halls of the plants, the visitors were treated to the spectacular sight of the discharging spillways at L'Aigle Dam where the twin troughs are curved and superelevated in such a manner as to rotate the flowing flat sheets of water to a vertical position so they will be confined within the walls of the gorge below. It was a spectacular finish.



ROCK CUTS as much as 95 ft deep were primary construction effort achieved in wintertime operations on a Wyoming highway job. Through scheduling of this type, traffic delaying operations are out of the way before summer tourist travel starts.

Winter No Bar to Highway Job

Highway construction can be expedited in colder northern states by taking care of rock excavation during winter months.

This was well demonstrated by the Wyoming Highway Department's experience on a $530,000 contract for a section of a major north-south route where summer tourist travel is high—making it desirable to get a head start.

The contract calls for grading and paving 3 mi of U. S. 20 in Wind River Canyon between Shoshoni and Thermopolis. This route was built in 1922-24 and is being modernized.

Major contract item is Class A excavation (solid rock) totaling 195,000 cu yd for which Inland Construction Co., of Omaha and Cheyenne, bid $1.33 per cu yd. Also included is Class B excavation (estimated to be 20% rock) totaling 145,000 cu yd for which Inland bid $0.91 per cu yd. Work of both classes dominated winter operations.

Weather conditions include frequent light to moderately heavy snow storms with temperatures ranging from minus 25 F to 40 F. Although the contractor expected to lose about six weeks due to bad weather, he shut down only 10 days because of weather between Dec. 15 and March 15.

ONE-MAN DRILLS were used exclusively in the extensive rock excavation operations. Contractor claimed better progress than with more usual wagon drills because compressors could be made to serve more drills.

Complicating the situation were these restrictions on operations:

- Road must be opened to traffic

PORTABLE GRINDER sharpens carbide tipped drill right at the site. The grinder shown is powered by air and weighs only 9 lb.

NORMAL EXCAVATION procedures were followed despite low temperatures. Here, tractor-drawn rear dumps are loaded by shovel.

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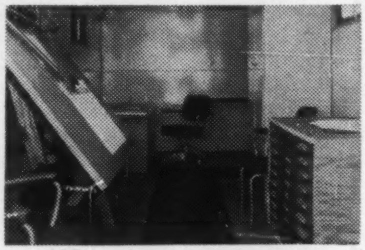

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from noon to 1 P.M., 5 to 6 P.M., and 10 P.M. to 8 A.M., with continuous one-way traffic after May 27.

- To protect a waterway nationally known for its sports fishing, the contract prohibits dumping rock in the river.
- Contractor is liable for any damages to railroad (CB&Q) right of way some 400 ft distant on opposite side of river.

These restrictions affected blasting to the extent that material had to be cleaned up enough to permit traffic to move at the required hours, and resulted in extra effort to provide careful control of rock breakage.

• **One-man drills**—The contractor standardized on light-weight, one-man drills for rock work in preference to the more usual wagon drills. One reason was lower initial cost. This is based on the computation that the 915 cfm capacity of the two compressors on the job would operate three wagon drills or 15 jackhammers. And the contractor could obtain five times more footage drilled—based on equal drilling speed per machine—for $2\frac{1}{2}$ times greater operating cost—15 jackhammer operators against 6 wagon drill crewmen.

Rock encountered includes diorite and red granite in solid masses and badly fissured sandstone and limestone.

All rock work was accomplished with Atlas-Copco jackhammers using $\frac{7}{8}$-in. hexagon integral Sandvik Coromant drill steel in graduated lengths through 21 ft. During the first half of the work the contractor found that 1.15 ft of drilling was needed for each cubic yard of rock excavated.

The jackhammer steel has a relatively small bit diameter which is said to economize on powder cost. Starter steel is $1\frac{5}{8}$-in. gage while the 21-ft length has a $1\frac{5}{16}$-in. bit.

During coldest weather, jackhammers were kept operable by injecting liquid gas into the air lines to keep the hammer cylinders from freezing.

The rock cuts are drilled and blasted in layers from the top down. Biggest cut is 95 ft deep, 60 ft wide and 1,100 ft long. Lifts are around 15 ft with drill hole depths ranging up to 21 ft and averaging just under 16 ft.

On each shot, from 300 to 800 holes are loaded with 40% dynamite. The four or five inside rows are blasted first with succeeding rows delayed 25 milliseconds each.

J. R. Bromley is chief engineer of the Wyoming State Highway Department. Darrell Robertson was project engineer. For Inland Construction Co., A. B. Nuss is first vice president and western manager and Dan Ratliff was superintendent of the Wind River Canyon Project.

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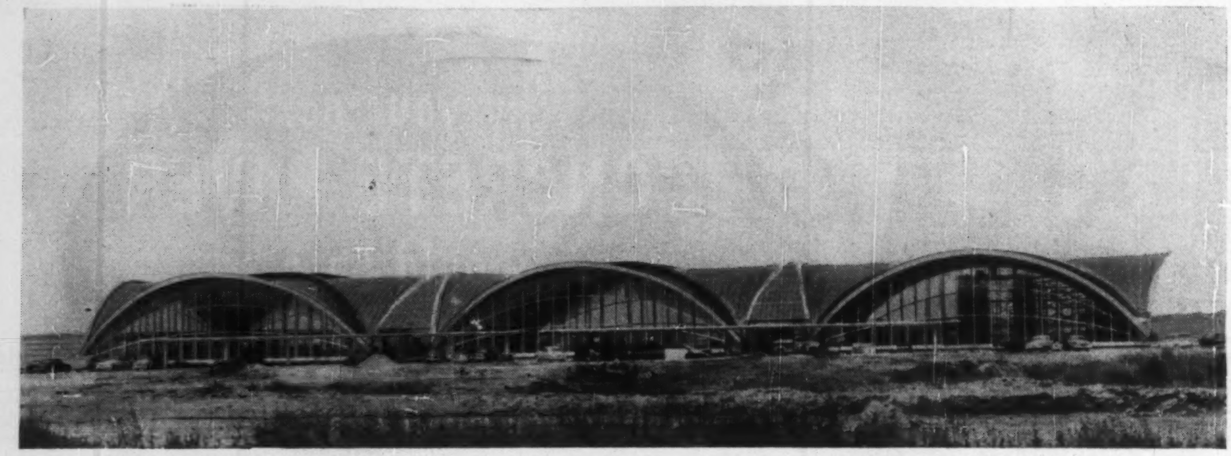


SHEATHED IN COPPER, three thin-shell concrete arch domes present unusual view on approach to St. Louis' brand-new municipal airport terminal building.

Arches Make Spectacular Air Terminal

The carpenter foreman for L. & R. Construction Co., St. Louis, was inclined to refer to the city's new airport terminal building as a carpenters' horror. But the odd-roofed structure, nevertheless, is nearly completed now, and without question is a construction as well as a municipal showplace.

What the carpenter was referring to particularly was the very complicated formwork that was necessary for construction of the main architectural feature of the three-level terminal building: Three pairs of thin-shell cylindrical concrete barrel arches that provide a clear floor area 415 ft long by 123 ft wide, rising to a high point 32 ft above the finished main floor.

The arches will cover the top floor of a structure that will be at ground level on the south side, but three stories high on the north side, where airplanes will unload passengers and freight (ENR Nov. 18, 1954, p. 34). The top floor, thus, will have direct access from main highways. It will accommodate a restaurant, ticket offices and other facilities.

The middle floor (known as the "finger floor") will provide additional passenger and spectator facilities including rest rooms, baggage rooms and a nursery and airline offices. On the ground floor will be a post office, additional airline offices, kitchens and other services. The two lower floors are traversed their full 415-ft length by truck passageways to permit easy handling of cargoes and mail. The building will be completely air conditioned, and will be heated from a central plant located in another structure.

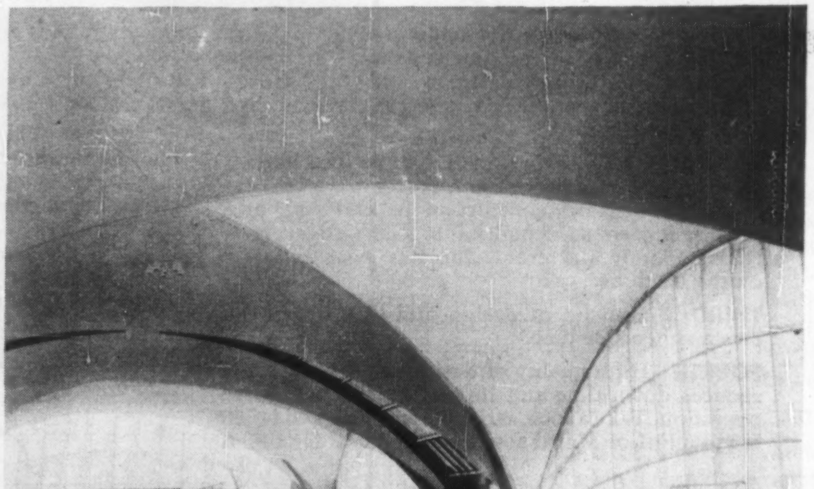
From the second floor, three "fingers"—with panel heating, and served by moving stairs—will provide for passenger movements to and from planes.

- **Arch problem**—The roof is unusual in that it consists of intersecting pairs of cylindrical shells varying in thickness from 4½ in. at the center to 8 in. at the edges. In plan, the whole roof appears to be roughly octagonal in shape; from the ground level, the structures look as if two huge concrete Quonset huts had been cut in half, and fitted together at the center like spokes of a wheel.

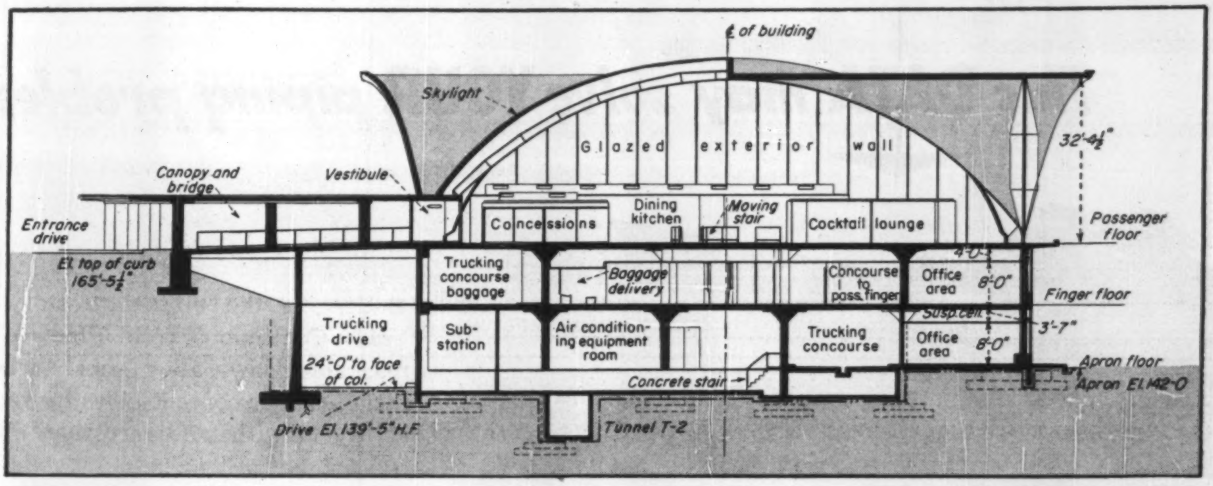
The shells are stiffened by two diagonal ribs, with 164-ft spans, 3 ft 5 in. deep at the crown with a constant width of 18 in. There also are peripheral stiffening ribs with 116-ft spans. The ribs meet at the four corners of each pair of intersecting shells, where they are supported on hinges. These, in turn, are mounted on heavy steel columns that are carried down to reinforced concrete bearing walls. Arch thrust is taken at the columns by two 18x1-in. steel bands extending around perimeter of the top floor.

The eight openings at the ends of the shells along the outside of the building are glazed to form huge arched windows with about 3,840 sq ft of glass. Steel mullions rise from the floor to the edge of the roof and are faced with aluminum strips.

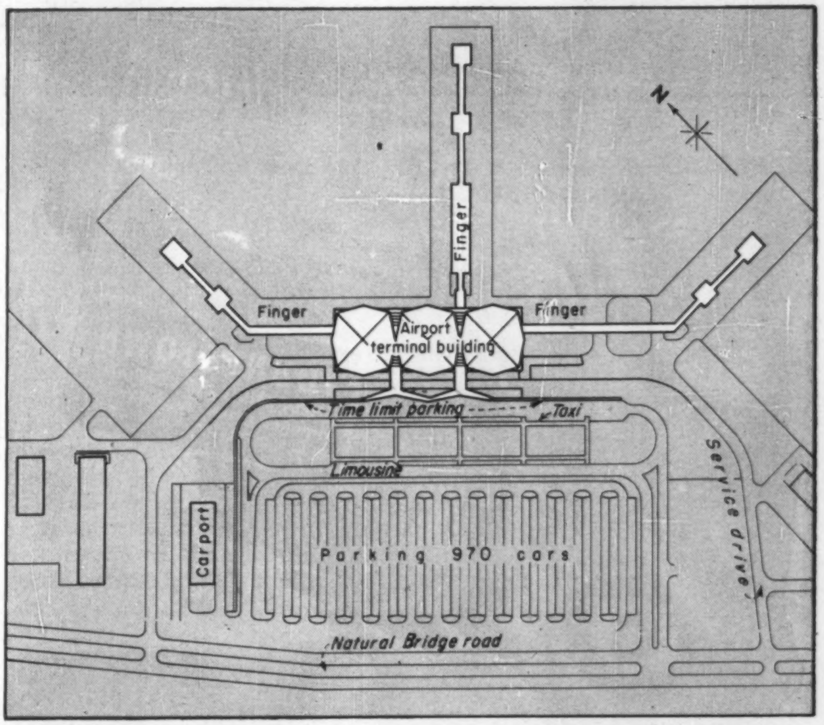
Illumination will be indirect—from a series of huge, bathtub-like fixtures on the floor, throwing light upward to the underside of the dome surface.



INTERIOR OF PASSENGER FLOOR is free of all obstructions to view through huge windows provided by shape of concrete arches. Lighting will be reflected from floor.


℄ of building
Skylight
Glazed exterior wall
Canopy and bridge
Vestibule
Entrance drive
El. top of curb 165'-5½"
Concessions
Dining kitchen
Moving stair
Cocktail lounge
32'-4½"
Passenger floor
4'-0"
Trucking concourse baggage
Baggage delivery
Concourse to pass. finger
Office area
8'-0"
Finger floor
Susp. ceil.
3'-7"
Trucking drive
Sub-station
Air conditioning equipment room
Trucking concourse
Office area
8'-0"
Apron floor
Apron El. 142-0
24'-0" to face of col.
Concrete stair
Drive El. 139'-5" H.F.
Tunnel T-2

DOMES SERVE AS ROOF over passenger entrance to terminal building. Engineers took advantage of sharply sloping site to make field side of structure (at right) two full stories below passenger entrance.


N
Finger
Finger
Finger
Airport terminal building
Time limit parking
Taxi
Service drive
Limousine
Carport
Parking 970 cars
Natural Bridge road

TERMINAL BUILDING layout provides direct access to main highway leading to city, ample parking space.

• **Form design**—With completion of the main structure to the third (passenger) floor level, real erection problems started for William Dunn, L & R's job superintendent.

Designed by Roberts & Schaefer, Chicago, the formwork consists of four highly complex wood structures that had to be mobile under tightly restricted vertical clearance. The forms were designed for handling from the passenger-level floor. Each form consisted of a set of wood trusses with curved upper chords to conform with the curvature of the finished shells, and a supporting framework. All were moved on railroad-type trucks with flanged wheels for traveling on light rails. Telescoping posts and two sets of rollers (to be moved east-west, or north-south) made it possible to shift the forms from old to new positions. Final positioning was accomplished with screw-jacks from the floors.

Also included was necessary formwork for the stiffening ribs—which are above the domes for most of their spans, appearing below only near the point of contact with the supporting hinges and columns.

The forms were shipped to the site semi-fabricated (after initial fabrication by Timber Structures, Inc.), then completely fabricated by L & R.

• **Concreting**—With the forms for the first set of arches in place, and the double layer of reinforcing bars positioned (with additional reinforcing at the intersection of shell and ribs to take care of increased stresses), L & R's construction crews set to work.

With a 90-man crew assembled and four crawler cranes spotted (one on each side of the form), a steady flow of truck-mixed concrete started to arrive, and work on casting the approximately 400 cu yd of concrete per dome as a continuous operation began.

Initially, the contractor started with a concrete slump of 2 in., found it too dry, and finally settled on a slump of 4 to 5 in. The final mix had a strength of 4,500 psi in 28 days.

Concrete was placed on all four sides simultaneously, with two of the cranes, equipped with shorter booms, dumping directly into the forms, two longer-boom cranes dumping into hoppers that fed buggies. Concreting started from the perimeter and worked inward toward the center.

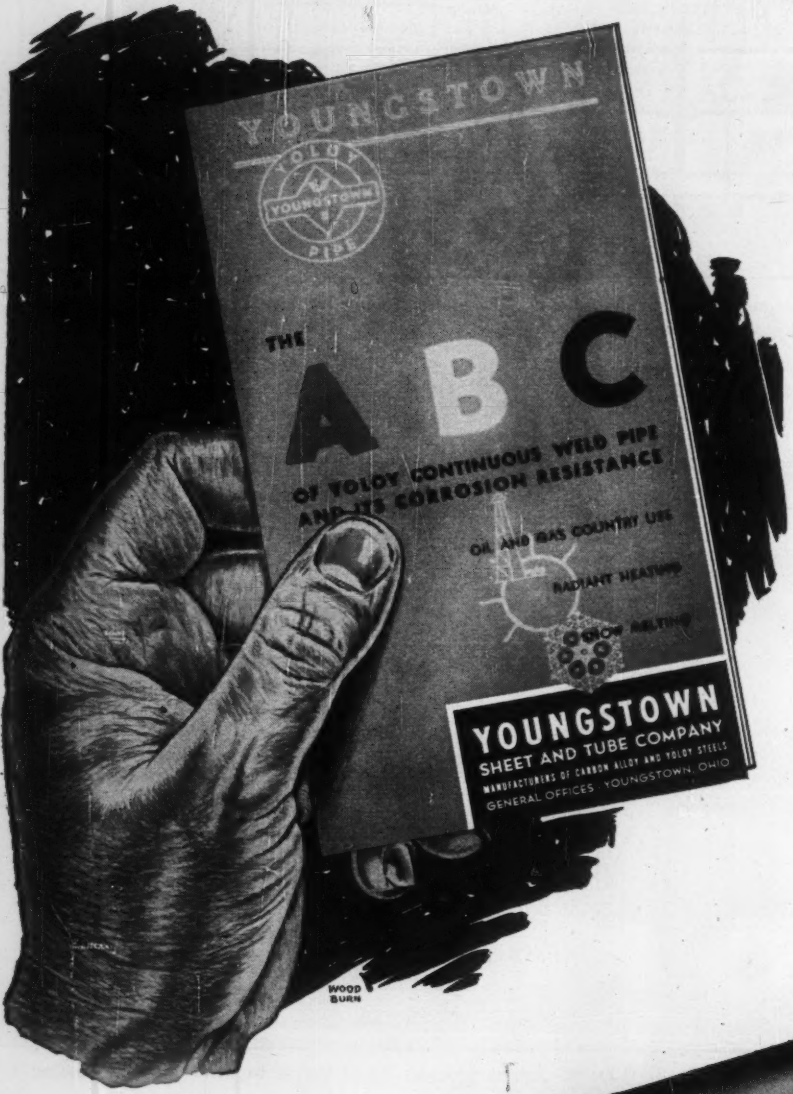
As soon as the two smaller cranes had hit the limit of their reach, they —and the two crews they served—were taken off the job. The remaining two crews finished the pour.

Best time achieved (on the center shells) was 11½ hours.

Precast concrete facing the peripheral ribs was placed in the forms before concreting started, and thus cast integral with the dome itself.

Being built for the Board of Public Service of the City of St. Louis, the building was designed by Hellmuth, Yamasaki & Leinweber, St. Louis architects; William C. E. Becker, St. Louis, was structural designer; Ferris & Hamig, St. Louis, were mechanical engineers. William Guse was project engineer for L & R; R. W. Hunt Co. was responsible for the concrete mix.

This DATA may solve YOUR piping problem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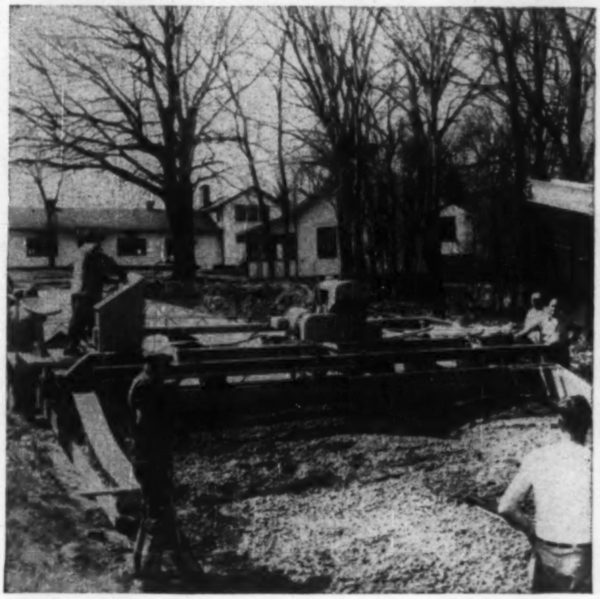
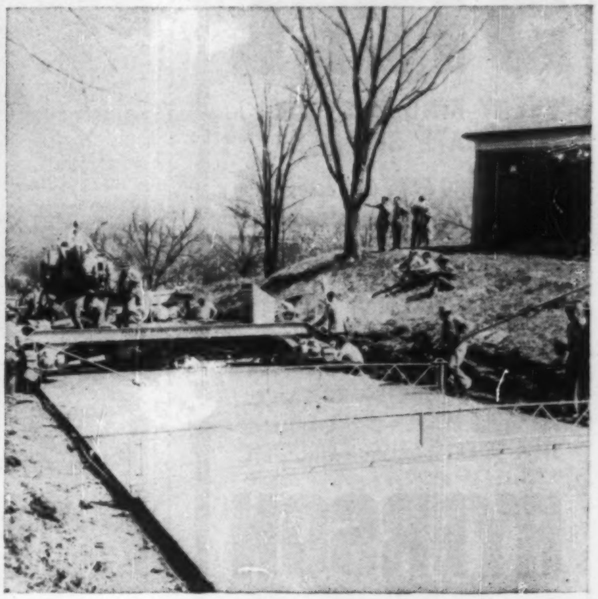




With Slipform Paver . . .

Concrete Goes in and Highway Comes Out

The "toothpaste" road may be here at last. After a number of expensive and too often ineffective experiments by paving contractors and equipment makers throughout the world, a slipform concrete paver has been developed which warrants commercial production.

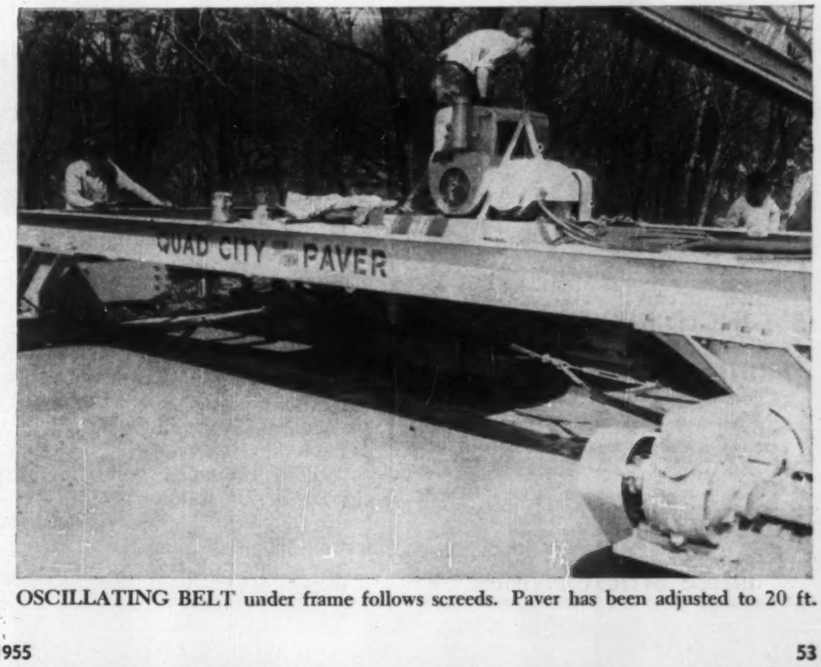
As yet, the paver has not passed the litmus test of years of usage, but its early field trials are impressive. On one job the experimental model placed a total of 1,420 lin ft of 24-ft pavement 9 in. thick in one 9½-hr day. Labor cost was $708 or about 18.69¢ per sq yd. This cost included operation of one 34E dual drum mixer and the slipform paver. Work accomplished consisted of concrete mixing, water hauling, subgrading, paving, finishing and curing. Hauling of batch mixes was not included.

The cost on this job was very nearly 50% less than what it would have been if forms had been used, but present production models of the paver are said to be more efficient than the unit used and will operate at an even lower cost.

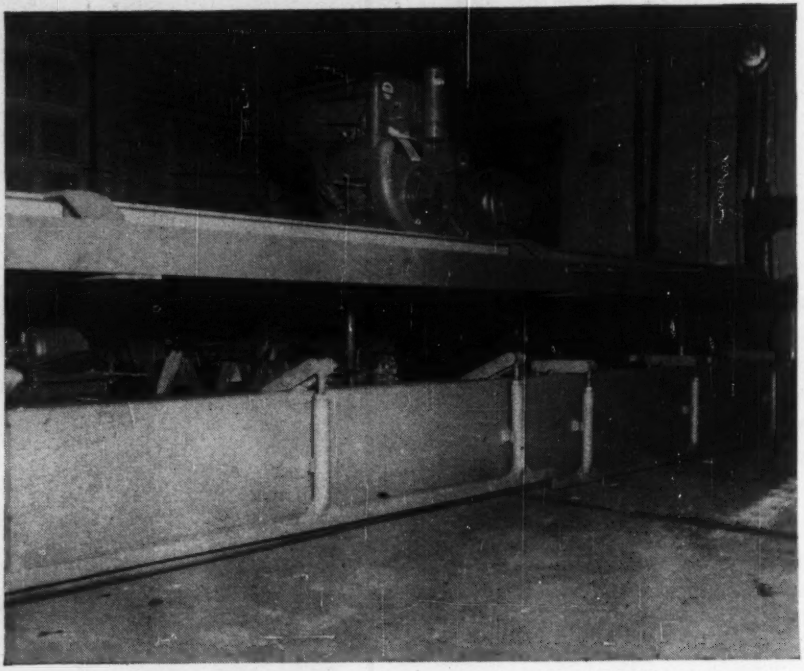
According to the manufacturer, another 5.93-mi job was bid at $172,629 —nearly $22,000 below the bid if side forms were to be used and $4,300 below a bid which included roll stone base and asphalt surfacing.

If you were to pay out the $24,850 price for the machine, here's what you'd get. The paver is a crawler mounted unit with 10-in. wide tracks. But unlike the usual crawler design, there are no track rollers in the frame. Instead, a set of rollers is spaced every 6 in. on each track link. The slipform consists of a 22-ft H-beam with specially constructed rails built in to ride on the track rollers. This reportedly gives the effect of a steel straightedge —22 ft long—being pushed along a roller conveyor. Short, choppy discrepancies across the surface of the pavement slab are eliminated in this way.

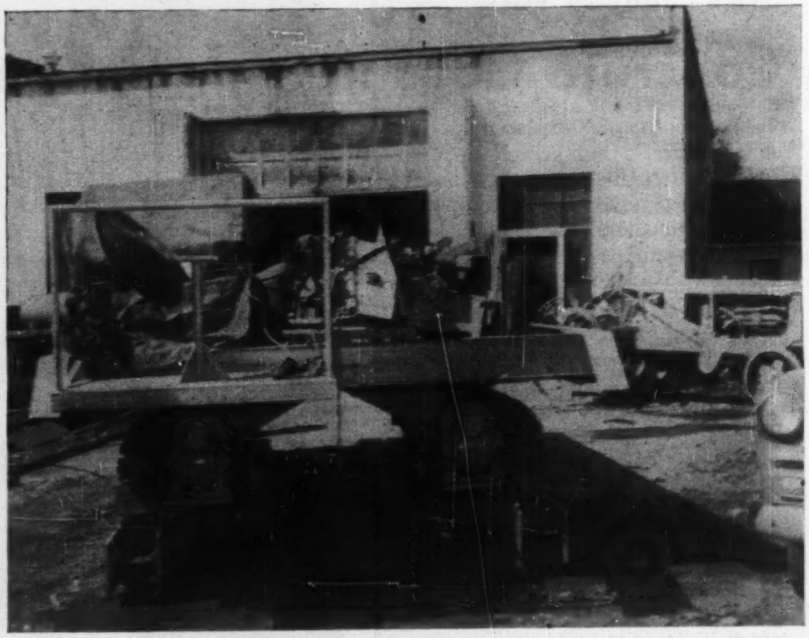
Tampers on the forward end of the machine eliminate the necessity for any spreading operation other than that which can be done by experienced



OSCILLATING BELT under frame follows screeds. Paver has been adjusted to 20 ft.



TAMPERS are located in front of extruding mechanism. Note 10,000-watt generator.



MAIN FRAME has been turned parallel with tracks for transport on low bed trailer.

manipulation of the mixer bucket: Strike-off is adjustable from 0 to 10 in.

A vibratory screed, designed to give complete compaction, is adjustable for specified crowns. Composed of two overlapping lengths of steel screed, it is also adjustable for crown correction on superelevated curves.

A 24-ft transverse belt with a reciprocal action follows behind the vibratory screed. This belt is also adjustable for slab thickness.

Adjustable for 20 to 24-ft slabs, the slipform sides can be brought in or extended on the job. To accomplish this, the top frame is unbolted and slid to proper position.

As stated before, the slipforms extend the full 22-ft length of the machine. Added slipforms trail in individual sections 16 ft long behind the machine, and are held parallel by means of cross trusses. The trailing forms are for the purpose of supporting bridges for bull-floating and for protecting the edges while straight edging or skip-floating the surface. They are not necessary for maintain-

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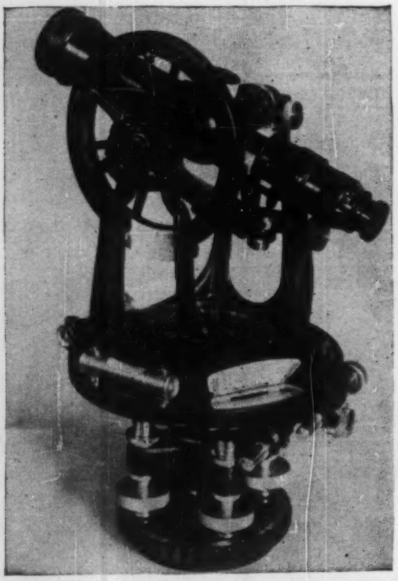

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UMECO OPTICAL DIVISION
465 California St. San Francisco, Calif.

ing vertical edges; the comaction obtained by extrusion and vibration is said to be all that is required.

A 10,000 watt engine-generator on top of the paver bridge produces electrical power for all operations, and it is designed to be lifted from the machine for use as a portable electric plant. Operation of the paver is from a control panel with the unit guided along a line established on the operator's side of the machine. The control panel may be used on either the right or left side.

When the machine is to be operated, grade control trenches—4 in. wider than the tracks—are graded to blue tops at each side of the pavement slab. These trenches can be graded by hand or with a form grader, the same as would be done if side forms were to be used. A subgrade planer equipped with the manufacturer's crawler tracks is then used for planing the subgrade to accurate elevation. The tracks of the slipform paver follow in the same trenches.

The paver can be equipped with any one of three sets of change gears. One set provides a forward speed of 2.25 to 4 fpm which is the proper range for full-width (24-ft) pavement 6 or more inches deep where the paver is being supplied by one 34-E dual drum mixer. The other two sets provide speed ranges of 3.5 to 6 and 6 to 11 fpm. These speeds are used for higher concrete production or where thin or resurfacing slabs are being placed on highway pavement.

According to the manufacturer, any desired slump from 1 in. to 2½ in. may be used, with 1½ to 2-in. slump being the ideal for high efficiency operations.

Tests by the Portland Cement Association indicate a reduction of less than 1% in air content due to the action of the vibratory screeds. Tests by the Illinois Division of Highways confirm this finding insofar as total air loss is concerned, but indicate a smaller reduction in air content near the surface of the slab. Evidently this is caused by migration of air upward during the consolidation process. The company's conclusion from these tests is that protection from surface sealing is not impaired by loss of entrained air due to surface vibration with the vibratory screeds.

For traveling, the main frame of the machine can be turned parallel with the slipform and tracks. With the extruding mechanism, vibratory screeds and oscillating belt loaded on top of the platform provided by the center section, the paver becomes a compact package weighing less than ten tons. Under its own power it can be driven up a ramp and loaded on an 8-ft wide trailer. The distance between the outside edges of the tracks is 7 ft 8 in. while the overall width of the frame is 9 ft. 5 in.

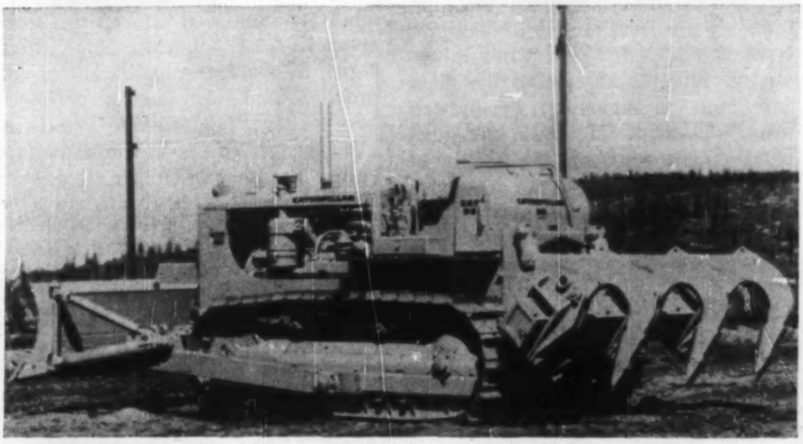
A short movie is available which shows one of the experimental models in operation. QUAD-CITY EQUIPMENT CO., P.O. BOX 274, 644 25TH AVE., ROCK ISLAND, ILL.

Ripper Designed for More Powerful D8's

A new heavy duty Ateco rock ripper has been designed to take advantage of the new Caterpillar D8 tractor's increased work power (ENR, Mar. 31, p. 57).

The new unit is a heavier duty version of the rock ripper in use for the past two years. Improvements include a stronger tool beam, thicker-sectioned ripper shanks, heavier drawbar plate, and renewable wear pads on the swinging brackets. The hydraulic system includes a newly designed pump that is said to be 25% more efficient, run cooler, and reduce power required.

As in previous units, the ripper shanks are specially curved to aid penetration and to produce what the manufacturer calls an underground



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"quivering" action that reportedly shatters rock and other hard materials for easy scraper loading. Shanks are equipped with extra-heavy rock-splitting boots and points. The shank has two adjustments, one for 18-in. penetration, the other for 24-in. depths; a 30-in. depth is also available. The head frame is designed to accommodate special tools, including subsoiler shanks capable of penetration up to 48 in. Shanks attach to the tool beam by swinging brackets that permit them to follow the tractor like a trailer.

The hydraulically-controlled unit mounts on the rear of the tractor, leaving track frames and front take-off free for dozer installation. The mounting arrangement puts the pull on the tractor drawbar rather than on the tractor case, thus precluding possible tractor damage. AMERICAN TRACTOR EQUIPMENT CORP., 9131 SAN LEANDRO BLVD., OAKLAND 3, CALIF.

New Chemicals Potentially Useful in Sewage Treatment

A recently developed group of synthetic polymers have the ability to agglomerate finely-divided solids in suspensions so that settling and filtration are accelerated. Developed originally for the mining industry where settling of slimy mineral-bearing pulps is a problem, Aerofloc Reagents appear to have application in water, sewage and industrial wastes treatment.

According to the company, addition of small quantities at the digestion stage will speed up the settling of colloidal suspensions from the settled sewage, thereby producing a clearer supernatant overflow. In treating wet sludge, these new materials may also be helpful where present plant capacity is being taxed by an inordinate population growth.

Where suspended solids are removed by filtration, Aerofloc Reagents are said to have improved filtration rates as much as 150% on various types of materials. In the mining industry, filter cakes, ordinarily slimy and high in moisture, have been firmed up so that they could be readily handled. In addition, washability of the filter cakes reportedly has been improved, thereby cutting soluble losses or improving liquid recovery.

Following their application in the mining industry, the reagents were next used by a number of coal properties to accelerate the settlement and removal of suspended solids from washery effluents prior to discharge of these effluents into a stream. At one mine it is reported that the addition of only 7 lb of reagent per 7 hour day treats 10,000 gpm of washery effluent running 3 to 4% solids by weight, giving a clear thickener overflow which can be discharged into a stream. Further, plant-scale testing at a New England knitting mill showed that only 4 ppm of reagent caused rapid settling of a textile waste material and doubled the effective capacity of the waste treatment plant, since the settling tank could be discharged more quickly. MINERAL DRESSING DEPT., AMERICAN CYANAMID CO., 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Tandem Roller Has Twin Guide Rolls, Torque Converter

A three-axle tandem roller has a variable weight range from 14 tons (metal weight) to 20 tons fully ballasted with water. In addition to the main compression or drive roll, it has twin guide rolls with synchronized hydraulic steering. Finish rolling is said to be up to 50% smoother than with conventional tandems, and up to 60% greater tonnage of material can be compacted per day.

A feature of the roller is that it is supplied with a torque converter drive as standard equipment. Manufacturer's reports indicate that the torque converter drive saves up to 25% in fuel, engine life is increased 35% and forward-reverse clutches 40-50%. THE GALION IRON WORKS & MFG. CO., GALION, OHIO.

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The Corridor-Liter is a fixture designed especially for lighting of long, narrow areas.

Suitable for airports, rail and bus terminals, hospitals and schools, the fixture is a trim unit shielded by louvers of one-piece, light-weight aluminum finished in white baked enamel. The absence of any horizontal surfaces eliminates a cleaning problem, and relamping is facilitated by clips which release the louver.

4 and 8-ft units are available for either bi-pin regular or rapid-start lamps. SMITHCRAFT LIGHTING DIV. CHELSEA, MASS.

Correction

The address of the Badger Machine Co., manufacturers of the Hopto 360 (ENR June 2, p.64) was given incorrectly as Winona, Wis. The company is located in Winona, Minn.

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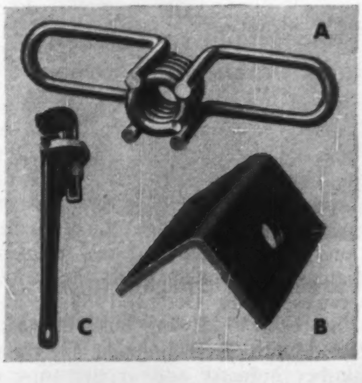

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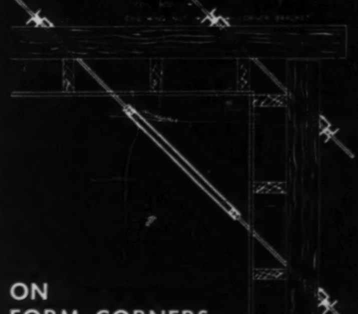
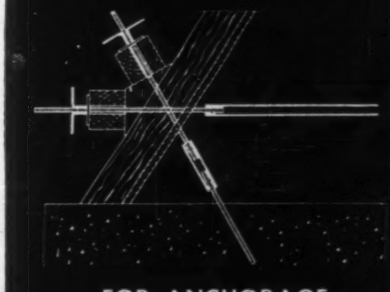


ON FORM CORNERS



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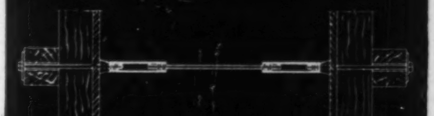

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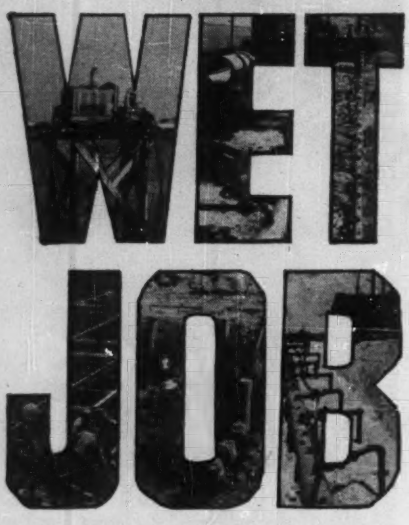

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MEN AND JOBS

Col. P. D. Berrigan

Berrigan Is Named Engineer For North Central Division

Col. Paul D. Berrigan, formerly South Pacific Division Engineer for the Corps of Engineers in San Francisco, will become North Central Division Engineer this week. He succeeds Col. Wendell P. Trower, scheduled to retire after 37 years of duty as an army engineer.

In his new post, Col. Berrigan will command the largest Corps of Engineers Division in the United States. With headquarters in Chicago, the division includes the U. S. portion of the St. Lawrence Seaway.

A West Point graduate, Col. Berrigan was assigned to the South Pacific Division in January 1953. His earlier assignments have included duty in the Portland and Kansas City Districts and in the Southwest and Western Ocean Divisions. During World War II, he served in the ETO.

Col. Berrigan's successor as South Pacific Division Engineer is Col. William F. Cassidy, who reported to the San Francisco office last summer as assistant division engineer after attending the National War College. In addition to overseas service in World War II and in the Korean war, Col. Cassidy has served as assistant to the Portland District Engineer, with the 3rd Engineers in Hawaii, and with the Mississippi River Commission and the Lower Mississippi Valley Division.

A. C. Neff Named President Of Professional Engineers

The National Society of Professional Engineers has named Allison C. Neff, of Middletown, Ohio, as its new president.

Now vice president of Armco Drainage & Metal Products, Inc., Neff began his professional career as assistant city engineer in East Cleveland, Ohio, and joined Armco in 1944. He is a member of the Professional Engineers Conference Board for Industry and is a former vice president of the Ohio Highway & Turnpike Association.

As president of NSPE, Neff succeeds Clarence T. Shoch, of Allentown, Pa.

Pendergast Receives Medal For Refractory Research

The United States Department of Commerce has presented its Silver Medal for meritorious service to William L. Pendergast in recognition of his contributions to government and industry through research on refractory materials.

Pendergast has been a member of the Refractories Section of the Mineral Products Division of the National Bureau of Standards for the last 35 years. Materials for which he has developed laboratory tests include refractory mortars and concrete, plastic refractories, fire clay and fire-clay brick.

His present investigations relate to the thermal stability and other properties of refractory concretes in an effort to develop a suitable material for jet aircraft warm-up and power-check aprons.

Lumber Industry Official Joins Defense Department

Frank M. Ewing, of Chevy Chase, Md., has become deputy assistant secretary of defense. He is assigned to the Defense Department's Properties and Installations Office, which is primarily responsible for the construction, maintenance and real property management policies of the armed services (ENR, Dec. 3, 1953, p. 21).

Since 1936, Ewing has been associated with the wholesale and retail lumber industry and at the time of his appointment was an officer and director of several companies, including the Frank M. Ewing Co., Beltsville, Md. He was a member of the Retail Lumber Industry Advisory Committee to the War Production Board and is now a member of the

Lumber Industry Advisory Committee to the Secretary of Commerce.

Ewing succeeds Rudolph W. Weitz, who came to the Defense Department in 1953 from Des Moines, Iowa, where he was president of the Weitz Construction Co. Weitz recently resigned to return to private business.

Architect Firm Sets Up Two Summer Fellowships

The New York architectural firm of Voorhees Walker Smith & Smith has established two summer fellowships, one at Rensselaer Polytechnic Institute and the other at the University of Virginia. The fellowships are available to members of the schools' architectural faculties, and those to whom they are awarded will spend 10 weeks in the firm's New York office.

Commenting on the fellowships, Ralph Walker, senior partner, said: "We hope to give these instructors and many of their contemporaries a clear-cut insight into architectural practice on a large scale, so that they can return to classes with a clearer sense of the many problems that occur and how they are met." Men who undertake the program will spend some time in each of the firm's de-

Chief of Engineers Honored

Maj. Gen. Samuel D. Sturgis, Jr., U. S. Army, Chief of Engineers, was awarded an honorary degree of Doctor of Engineering by Rose Polytechnic Institute, Terre Haute, Ind., at the Institute's 77th commencement exercises. The degree was conferred in recognition of Gen. Sturgis' "outstanding achievements as an engineer, military and civilian leader" during his 37 years of service with the Corps of Engineers.

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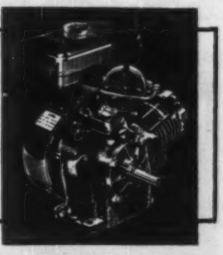

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partments and will be exposed to the financial problems involved in architectural practice, basic design, engineering and interior decoration.

Faculty members who received the fellowships this summer are Alexis Yatsevitch of R.P.I. and Roger C. Davis of the University of Virginia.

City Planning Consultant Joins Illinois University

The University of Illinois has appointed Louis B. Wetmore, city and regional planning consultant, as professor of city planning and landscape architecture and director of its Bureau of Community Planning.

Now a visiting professor of city and regional planning at Massachusetts Institute of Technology, Wetmore recently returned from Cairo, Egypt, where, under the auspices of the Foreign Operations Administration, he surveyed the possibilities of collaboration between Egypt and MIT in a planning program. His consulting and research work for state and federal agencies and Rockefeller Foundation has included techniques of location analysis and large lot zoning.

To meet the needs of the industrial and urban development expected to attend an expanding population, Wetmore's activities at the University of Illinois will be integrated with other university programs in related fields.

New England Power System Realigns Civil Engineers

To streamline and simplify its engineering organization, the New England Power System, Boston, Mass., has merged three of its technical groups into a newly formed civil engineering department.

Headed by George H. Anderson, engineer of structures, the new department forms a part of the New England Power Service Co. and falls within the general jurisdiction of Edward W. Dillard, chief engineer of the Service Company.

Other engineers named to key positions in the new organization include Earl P. Mosely, assistant civil engineer; Howard P. LeCount, structural engineer; Andrew E. Hill, transmission engineer; and Kellogg W. Kyle, engineer of surveys.

Men and Jobs Briefs . . .

• **Associations**—The Connecticut Society of Professional Engineers elects **Arthur B. Onderdonk,** of Glastonbury, president. Before opening his own office as consulting engineer, Onderdonk was senior structural engineer of the Connecticut Public Works Department.

• **Careers—Capt. Daniel B. Ventres, CEC, USNR,** has returned to the Bureau of Reclamation as assistant chief of its Procurement and Property Management Division following his release to inactive duty in the Naval Reserve. He served in Europe as chief of the Engineering Division of the Joint Construction Agency . . . **William H. Sorrell,** former maintenance superintendent of the Indiana State Highway Department, is appointed a member of the Indiana Highway Commission.

Talcott Moore is named to the newly-created post of coordinator in the Wyoming Highway Department. A veteran of the department, he has been assistant construction and maintenance engineer . . . **Elmer G. H. Youngmann** succeeds **Charles H. Waters,** who retires this month, as head of the Buffalo District Office of the New York State Department of Public Works.

• **Corps of Engineers**—The South Pacific Division, San Francisco, receives a Department of the Army Award of Merit for Safety in the field of military construction . . . **Lt. Col. Herbert Richardson, Jr.,** executive officer of the Galveston District, will return to West Point in July as instructor in mathematics.

• **Business**—Merritt-Chapman & Scott Corporation elects **Frank Leahy** a vice president for trade relations and **Carl McFarlin, Sr.** an executive vice president in charge of the company's chemical, paint and metallurgical division . . . **M. C. Conkey** is appointed senior design engineer in the San Francisco office of The H. K. Ferguson Co. . . . **A. J. Bedard,** former Pennsylvania state district highway engineer, is named engineer in charge of the Harrisburg office of Erdman, Smock & Hosley, consulting engineers.

• **Retirements—B. S. Morrow,** chief engineer and general manager of the Portland, Ore., municipal water bureau for the past 30 years, after 46 years with the bureau . . . **H. Irving Skilton,** Hartford, Conn., city engineer, following 46 years of service in the City Engineering Department . . . **Frank R. Austgen,** area construction supervisor for the California Division of Architecture, after 33½ years with the division.

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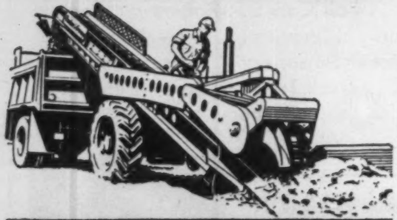

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OBITUARIES

Walter S. St. John, 72, structural engineer with Madigan-Hyland, Long Island City, N. Y., engineers, died June 20 in New York City. He helped design the cantilever and support framing for the United Nations buildings and also prepared the preliminary layout and secondary stress analysis of the Tappen Zee bridge in Haverstraw, N. Y. In 1928 and 1929 he worked on the structural design of the Department of Commerce Building in Washington, D. C. From 1938 to 1941 he was an assistant engineer for the New York City Board of Water Supply.

Allen P. Hachtmann, 77, consulting engineer and cement specialist, died June 12 in Allentown, Pa. He directed construction of a number of cement plants in South and Central America as well as in the U. S. At one time he was associated with Atlas Portland Cement Co., and following World War I he was the representative of Fuller Engineering Co. in London, Paris and Lisbon.

Lemuel T. Holmes, retired New York State engineer, died June 13 in Loudonville, N. Y. A graduate of Rensselaer Polytechnic Institute, he had been chief structural engineer in the State Department of Agriculture.

William M. Venable, 84, Pittsburgh engineer, died June 3. A graduate of the University of Cincinnati, he had been a consulting engineer with Blaw-Knox Co. since 1912. He was associated with construction of Long Key Viaduct connecting the Florida mainland with Key West, the East Boston Tunnel, and the New Orleans drainage system.

Donald E. Larson, 50, civil engineer with George C. Jacobs Co., building materials firm, Eureka, Calif., died June 7. During World War II he served as resident manager for Chicago Bridge & Iron Co. at Eureka on construction of floating Navy drydocks.

Thomas C. Frame, 71, former chief engineer for the Pennsylvania Department of Highways, died June 8 in Franklin, Pa. A past president of the Midwest State Highway Officials Association, he was chief engineer from 1939 to 1943 and from 1945 to 1947.

Howard T. Nunnally, 58, an engineering construction inspector for Richmond, Va., died June 10. He had been a city employee for 30 years.

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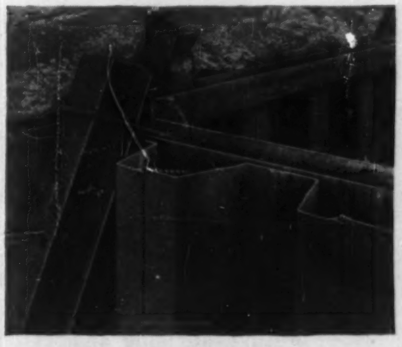

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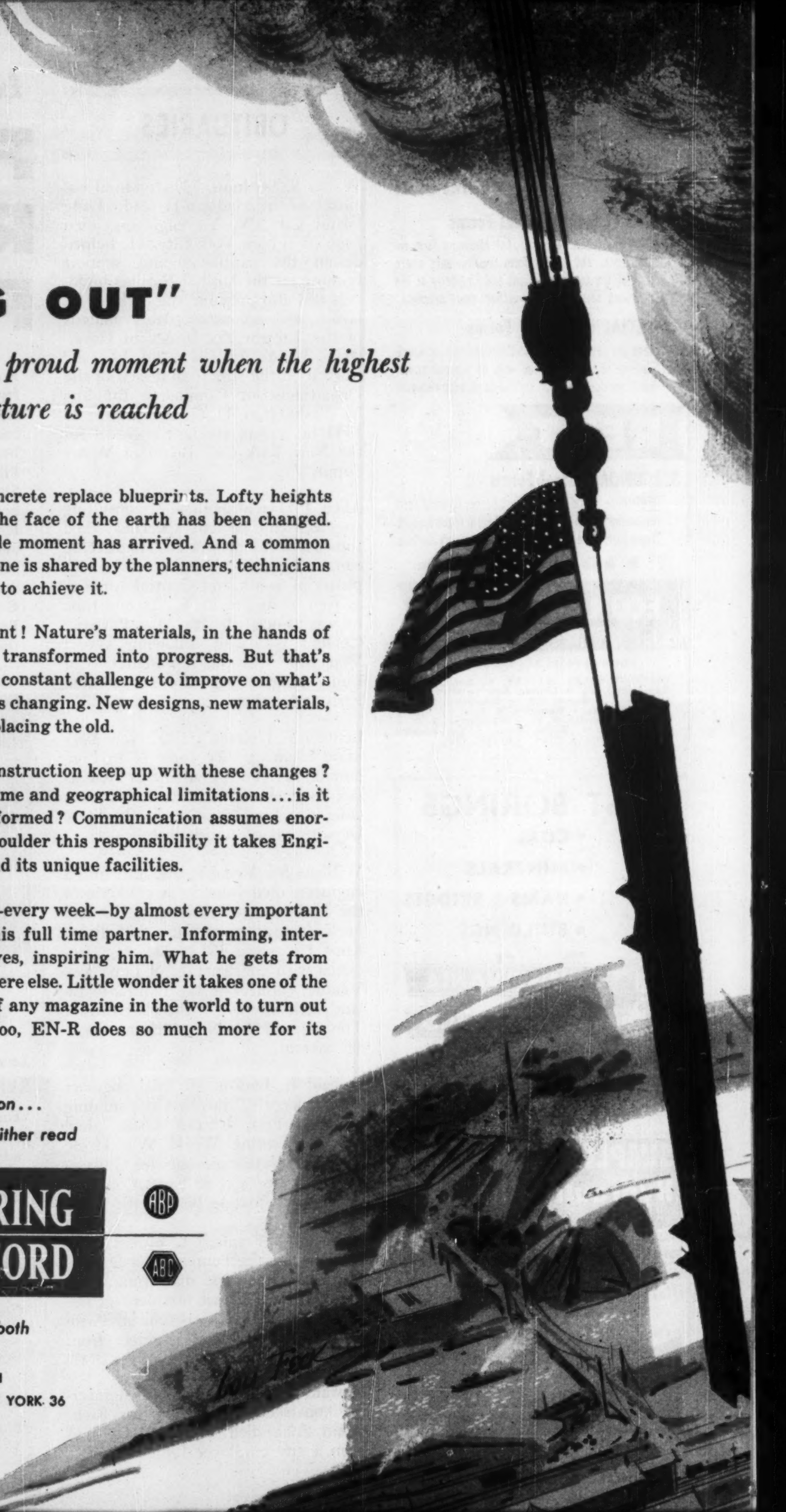

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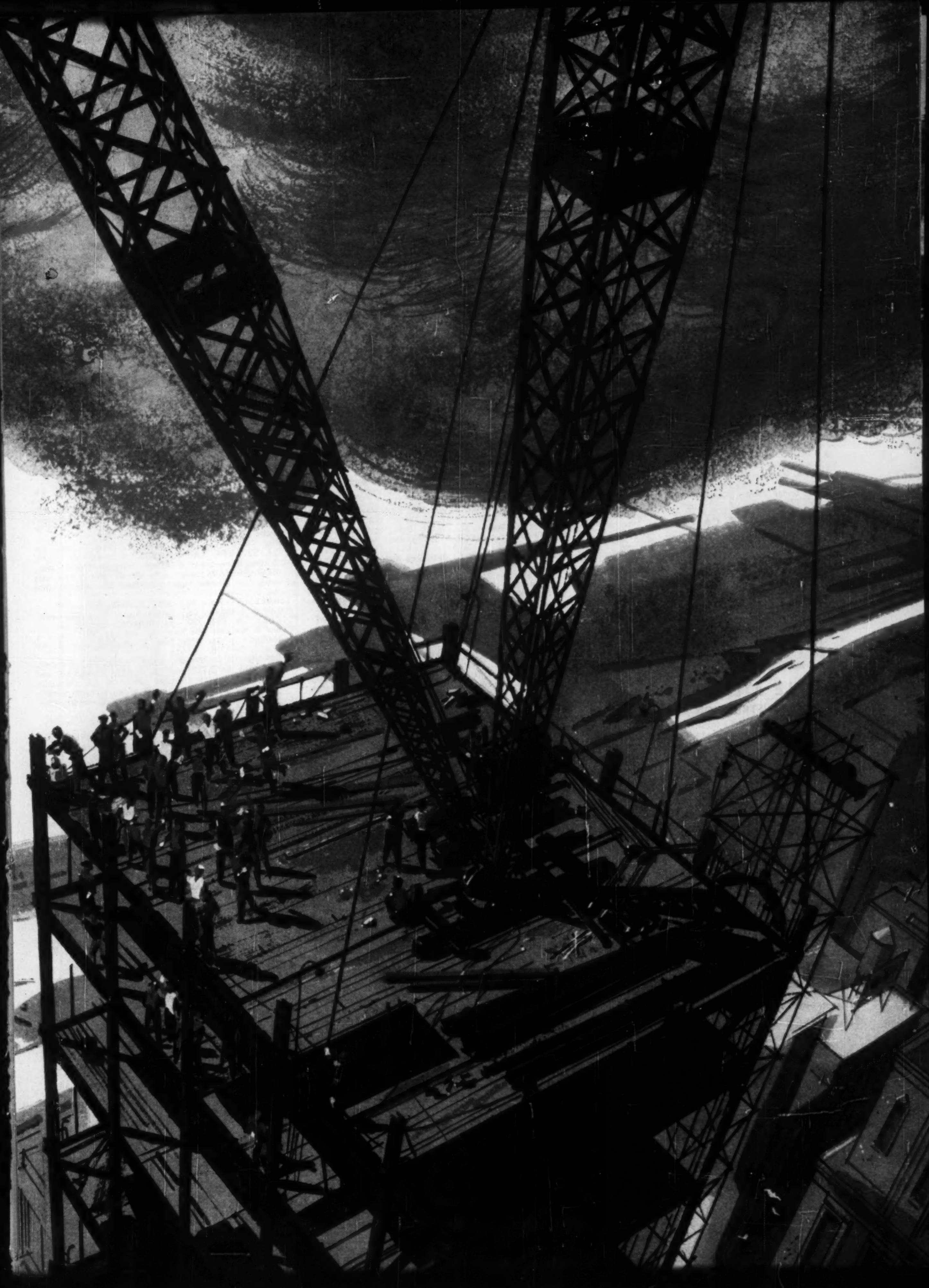

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **R. I., Scituate**—HIGH SCHOOL—BA 6/30—Town, Junior-Senior High School Bldg. Comn., Danielson Pike North, Junior-Senior High School, Rockland Rd., $1,000,000. Plans deposit $50. Leland, Larsen, Bradley & Hibbard, 711 Boylston St., Boston, Mass., archts. CD 12/9/54.

HEAVY CONSTRUCTION—LB & CA

NEW HAMPSHIRE—State Dpt. P. Wks. and Hys., State House, Concord,

R. G. Watkins & Son, Inc., Mill Yard, Amesbury, Mass., CA **$831,260.** road mix hy. 3 3/10th mi. Dover and Rochester. Bids June 9, awarded June 15. CD 6/14, under LB.

▲† **Verrier Constr. Co.**, 65 Commercial St., Portland, Me., LB **$1,158,898**, hydrant fueling sys., Portsmouth Air Force Base, ENG-19-016-55-138, PORTSMOUTH. N. H. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids June 15. CD 5/27.

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston, **Zone 16**,

Bayer & Mingolla Constr., Inc., 90 Lincoln St., Worcester, Mass. LB **$3,742,475.** Contr. No. 51-193, hy. and bridge constr., Chicopee and Ludlow. Bids June 16. CD 5/24.

BUILDINGS—LB & CA

▲ **Poorvu Constr. Co., Inc.**, 294 Washington St., Boston, Mass. CA **$1,028,444**, est. $1,080,000. E-509 Contr. 1 GYMNASIUM and SWIMMING POOL Teachers' College, BRIDGEWATER, MASS. State, Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. CD 6/8, under LB.

▲ **D. C. Loveys Co.**, 1430 Massachusetts Ave., Cambridge, Mass. LB **$1,103,966.** SCHOOL at Granite St., CAMBRIDGE, MASS. City, School Dpt., 1700 Cambridge St., Cambridge, Mass. Bids June 16. CD 5/18.

▲ **Aquadro & Cerrupi, Inc.**, Northampton, Mass. LB **$1,178,227.** senior high SCHOOL, SOUTH HADLEY, MASS. Town, School Bldg., 38 Carew St., South Hadley, Mass. Bids June 16. CD 6/1.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲† **N. Y. Plattsburgh**—HOSPITAL—BA on or about 8/4—U. S. Eng., 111 E. 16 St., **New York, Zone 3**, hospital, incl. utilities, site imprvs., Plattsburgh Air Force Base, $2,000,000-$2,500,000. Plans deposit $25. CD 7/16/54.

BUILDINGS—BA

▲ **N. Y., Brooklyn**—SCHOOL—BA 7/13—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical and lighting fixtures for P. S. 272, southeast corner Seaview Ave. and E. 102 St., $1,700,550. Plans deposit $24 general constr., $8 each for others. Extended date. CD 6/8.

HEAVY CONSTRUCTION—LB & CA

Edenwald Constr. Co., 15-45 6th Rd., Whitestone, N. Y. CA **$584,000.** street and yard imprvs. for Bay View Homes NYC-24 area bounded generally by Rockaway Parkway, Shore Parkway, E. 102 St., BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York, N. Y. CD 5/19, under LB.

▲ **Tibbets Contg. Corp.**, 1 Lawton St., Yonkers, N. Y. CA **$1,054,025.** Contr. 4, easterly and westerly intercepting sewers, force main, regulator chambers along easterly and westerly intercepting sewers, ELIZABETH, N. J. Bd. P. Wks., City Hall, Elizabeth, N. J. CD 5/4, under LB.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,

PTC—**Central Pennsylvania Quarry, Stripping & Constr. Co.**, Hazleton, Pa. CA **$3,799,072.** 4.07 mi. (Sec. 36-G) Franklin Twp. and Parryville Borough, Northeastern Extension, Carbon Co.;

PTC—**J. Robert Bazley, Inc.**, Pottsville, Pa. CA **$4,021,-269.** 5.83 mi. (Sec. 36-H) in Franklin and Penn Forest Twps., Northeastern Extension, Carbon Co. CD 6/13, under LB.

▲ **C. J. Langenfelder & Son**, 8427 Pulaski Hy., Baltimore, Md. LB **$2,206,325.** Contr. PT-110 Fairfield Land Section, Patapsco Tunnel, MARYLAND. State Rds. Comn., 108 E. Lexington St., Baltimore, Md. Bids June 16. CD 5/19.

▲† **George Hyman Constr. Co.**, 1010 Vermont Ave. N.W., Wash., D. C. CA **$4,794,586.** HOSPITAL, ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N. W., Wash., D. C. Bids June 9, awarded June 16. CD 6/13, under LB.

BUILDINGS—LB & CA

▲ **H. R. H. Const. Corp.**, 16 W. 46 St., New York 19, N. Y. CA Est. **$1,800,000.** 16 story APARTMENT at east side of Second Ave. between 42 and 43 Sts., NEW YORK, N. Y. Urban Housing Associates, 16 W. 46 St., New York 19, N. Y. Pomerance & Breines, 33 W. 46 St., New York 19, N. Y., archts. CD 2/25.

† **Thompson Constr. Corp.**, 11 N. Pearl St., Albany, N. Y. LB **$349,631.** training center and motor vehicle shed; LB **$420,022.** combination of training center and motor vehicle shed, A. C. & W. site, SCHENECTADY, N. Y. U. S. Eng., 116 E. 16 St., New York 3, N. Y. Bids June 16. CD 5/17.

† **Sovereign Constr. Co., and E. W. Tompkins Co.**, 1181 Broadway, New York 1, N. Y. LB **$1,061,213.** (7 bidders) modernization and rehabilitation of boiler plant and steam distr. lines, Watervliet Arsenal, ENG-30-075-55-452, WATERVLIET, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids June 14. CD 5/16.

Highwood Park Homes, c/o C. J. Kordys, archt., 116 Passaic St., Passaic, N. J. Owner Builds. **$900,000.** 42 HOUSES, on East Slope Rd., near Airmount Ave., MAHWAH, N. J.

East Brook, Inc., c/o John M. Gabriel, 334 State Hy. 17, Paramus, N. J. Owner Builds. **$800,000.** 38 HOUSES, Valley Rd., near Rte. 4, RIVER EDGE, N. J.

▲† **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md. LB **$2,203,500.** LABORATORY and air incinerator bldg., CAMP DETRICK, MD. U. S. Eng., First and Douglas Sts., N.W., Wash., D. C. Vitro Corp., 962 Wayne Ave., Silver Spring, Md., archt. Bids June 17. CD 6/8.

Porter Constr. Co., 5104 Baltimore Ave., Hyattsville, Md. LB **$808,000**, central OFFICE at New Hampshire Ave. and Sheriden St. N.W., TAKOMA PARK, MD. Suburban Trust Co., 8252 Georgia Ave., Silver Spring, Md. Paul Kea, 5109 Baltimore Ave., Hyattsville, Md., archt. CD 6/9/54.

SOUTH

BUILDINGS—BA

Va., Roanoke—SCHOOL—BA 7/14—Roanoke County School Bd., R. D. Nininger, supt., Court House, Salem, Cave Spring District Elementary School. $800,000. Frantz & Addkinson, 501 City & State Bldg., archts. CD 2/25.

La., DeQuincy—CORRECTIONAL INSTITUTE—BA 7/19—State Bldg. Auth., State Capitol, Baton Rouge, Proj. 0. 7 ICI, correctional institute. Plans deposit $200. Dibolls-Kessels, 637 Pere Antoire, Alley, New Orleans, archts.

HEAVY CONSTRUCTION—LB & CA

▲† **Diamond Constr. Co.**, Ocean Steamship Terminal, Savannah, Ga., LB **$2,490,464**, Wharf No. 2, Kings Bay, Serial No. ENG-09-133-55-62, GEORGIA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids About May 28. CD 4/18.

▲† **J. W. Gibson & Sons**, East Brewton, Ala., LB **$2,371,404**, railroad tract at Kings Bay. ENG-09-133-55-64. GEORGIA, U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids About June 6. CD 5/2.

▲† **The Jordan Contg. Co.**, Andrews Rd., Columbus, Ga. LB **$6,030,260**, permanent-type HOSPITAL, Serial No. ENG-09-133-55-54. FORT BENNING, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids About June 1. CD 3/25.

† **Gravier & Harper Co.**, Alexandria, La. LB **$869,527**, est. $785,676. three 3 story masonry dormitories, Alexandria Air Force Base, ALEXANDRIA, LA. U. S. Eng., P.O. Box 867, Little Rock, Ark. Bids June 15. CD 5/19.

Keller Constr. Co., 7900 Palm St., New Orleans, La. CA **$535,200.** Contr. 168 W modifications to basins C-7 and C-8 at water purification plant, NEW ORLEANS, LA. Sewer & Water Bd., 522 Carondelet St., New Orleans, La. Awarded June 8. CD 6/9, under LB.

Keller Constr. Co., 7900 Palm St., New Orleans, La. CA **$806,174**, est. $868,000. Proposal No. 5179, Wisner Drive overpass Wisner Drive at Florida Ave., NEW ORLEANS, LA. City Purch. Dpt., 320 City Hall, New Orleans, La. Bids May 20, awarded June 2. CD 5/4.

TENNESSEE—State Hy. Dpt., Nashville,

Foster & Creighton Co., Cotton States Bldg., Nashville, Tenn., CA **$921,797**, bit. materials surf. 2.909 mi. and bridge over Red River, St. Rte. 12, in Clarksville, Montgomery Co. Bids June 2, awarded June 8. CD 6/9, under LB.

† **Consolidated Contractors**, 1489 Thomas St., Memphis, Tenn. LB **$543,721.** est. $736,133, foundations and misc. work on the transonic circuit of the propulsion wind tunnel, Arnold Engineering Development Center, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn. CD 11/16/54.

BUILDINGS—LB & CA

Charles J. Craig Constr. Co., 1610 Westminster Dr., Columbia, S. C., CA **$482,010.** Rosemary SCHOOL Bldg., ANDREWS, S. C. Georgetown Co. Bd. Educ., Andrews, S. C. W. D. Harper & Sons, Florence, S. C., archts. Bids June 7. CD 4/29.

Maxwell & Kiker and Busbin & Kimble, 100 Allen St., Summerville, Ga., LB **$739,000.** Summerville High and Elementary SCHOOL addn.; Pennville White Elementary School addn.; Menlo White High and Elementary School addn., Summerville High and elementary school cafeteria addn., Chattooga Co., SUMMERVILLE, GA. State School Bldg. Auth., 41 Exchange Pl., S. E., Atlanta, Ga. Bids June 14. CD 5/27.

Caldwell & McCann, Box 477, Baton Rouge, La. CA **$882,923.** Part 1 and 2 story steel, concrete Westdale Junior High SCHOOL, BATON ROUGE, LA. East Baton Rouge Parish School Bd., Baton Rouge, La. Bids May 31, awarded June 10. CD 6/7, under LB.

Flint Bros Constr. Co., Box 1289, Jackson, Miss. CA **$386,589.** 2 story, steel, concrete 17,000 sq. ft. HOSPITAL, TALLULAH, LA. Madison Parish Hospital Service Dist., Courthouse Bldg., Tallulah, La. Bids May 18. CD 5/4.

▲ **Struck Constr. Co.**, 147 N. Clay St., Louisville, Ky. CA **$1 200,000.** LIBRARY, LOUISVILLE, KY. University of Louisville, 2301 S. Third St., Louisville, Ky. Bids June 2, awarded June 15. CD 6/7, under LB.

MIDDLE WEST

BUILDINGS—BA

▲ **Mich., Detroit**—PLANT—BA 6/28—The Cross Co., 4250 Bellevue St., Zone 7, plant 14 Mile and Grossbeck Rds., $1,800,000. Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, archt. CD 11/12/54.

▲ **Mich., Sterling**—PLANT—BA 7/7—Office Albert Kahn Associated Architects & Engineers, Inc., engr.-archt., 345 New Center Bldg., Detroit, chassis parts plant, 17 Mile Rd. and Mound Rd., $25,000,000 for Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. CD 2/16.

HEAVY CONSTRUCTION—LB & CA

▲ **INDIANA**—Indiana Toll Road Comn., 309 West Washington St., Old Trails Bldg., Indianapolis, Zone 4,

Bates & Rogers Constr. Corp., 600 W. Jackson St., Chicago, Ill., LB **$8,222,017.** (7 bidders) 2.5 mi. toll road, between Buchanan and Virginia Sts. in Gary, Lake Co. Bids June 15. CD 5/23.

(Continued next page)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings, $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listings)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildnigs
Industrial Buildnigs
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

INDIANA—Indiana Toll Road Comn., 309 W. Washington St., Old Trails Bldg., Indianapolis, Zone 4,
Dyer Constr. Co., 1615 Sheffield Ave., Dyer Ind., LB **$895,061**, 1 mi. sect. of road. City of Gary, Lake Co. Bids June 8. CD 5/17.

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Indianapolis, Zone 4,
H G. Christman Co. Inc., 850 Fellows St., South Bend, Ind., CA **$1,562,359.** toll plazas and lighting in Steuben, LaGrange and Elkhart Counties. Bids May 25. CD 6/1, under LB.

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Indianapolis, Zone 4,
Louis Garavaglia Constr. Co., Center Line, Mich. and **Kenny Constr. Co.**, Oakton St., Skokie, Ill., CA **$7,250,341**. Contr. C-5, grading, drainage, structures, paving 0.75 mi. Indiana-East-West Toll Rd. City of East Chicago. Bids June 1. CD 6/6, under LB.

▲ **Graft, Tecon, Mittry & Drake**, 714 W. Olympic Blvd., Los Angeles, Calif., LB **$5,326,680**, Sect. A; LB **$5,116,660**, Sect. B, LB **$2,253,300**, Sect. C; (3 bidders) tunnel work, water filtration plant, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids June 10. CD 5/20.

BUILDINGS—LB & CA

▲ **MacDonald Eng. Co.**, 188 W. Randolph St., Chicago, Ill. CA Est. **$2,000,000.** design and construct cement mfg. plant addn., ZANESVILLE, O. Columbia Cement Div. Pittsburgh Plate Glass Co., Zanesville, O.

▲ **John Griffiths & Son Constr. Co.**, 228 N. LaSalle St., Chicago, Ill., CA Total est. **$14,000,000.** building for constr. 2nd unit of an addnl. 100,000 kw capacity to Vermilion POWER STATION, west of DANVILLE, ILL. Illinois Power Co., R. L. Martin, Mgr., Power Plant Design and Construction, 134 E. Main St., Decatur 70, Ill.;
Midwest Piping Co., 1450 S. 2 St., St. Louis 4, Mo., CA, piping (Danville, Ill.);
Henry Pratt Co., 2222 S. Halsted St., Chicago, Ill., CA, mechanical erection (Danville, Ill.);
A. S. Schulman Electric Co., 2416 S. Michigan Ave., Chicago, Ill., CA electrical installation (Danville, Ill.);
Sprinkman & Sons, 837 S. Washington St., Peoria, Ill., CA, insulation (Danville, Ill.);
Terre Haute Boiler Works, 1140 Crawford St., Terre Haute, Ind., CA, flues and ducts (Danville, Ill.)

▲ **O. W. Burke Co.**, 1032 Fisher Bldg., Detroit, Mich. CA Est. **$2,000,000.** department STORE 30 acre site Dix Ave. and Southfield Rd., LINCOLN PARK, MICH. Sears Roebuck & Co., 15001 Woodward St., Detroit, Mich. Bids May 17. CD 5/3.

Mel Constr. Co., Mount Clemens, Mich. Owner Builds. Est. **$725,000.** 65 frame HOUSES Clinton River, MOUNT CLEMENS, MICH.

▲ **Alfred A. Smith, Inc.**, 721 E. Saratoga St., Ferndale, Mich. CA Est. **$1,000,000.** FACTORY OFFICE, OWOSSO, MICH. Midland Steel Corp., Owosso, Mich. Bids May 27. CD 5/25.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

Tex., Abilene—BA 7/22—City, A. P. Hancock, city mgr., City Hall, Grimes pumping plant, 16 m.g.d. $500,000. Plans deposit $25. Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs. CD 6/2.

BUILDINGS—BA

Kan., Pawnee Rock—SCHOOL—BA 6/29—Joint Rural High School Dist. and Barton-Pawnee Comn. School Dist. 2, grade school, $453,000. Mann & Co., Hutchinson, archts. CD 11/4/54.

Kan., Liberal—COURT HOUSE—BA 7/8—Seward Co., court house, $500,000, W. I. Fisher, 301 S. Main St., Wichita, archt. CD 11/8/54.

Tex., Fort Worth—HOSPITAL—BA 7/20—Osteopathic Assoc. c/o Dr. Phil Russell, pres., 3705 Camp Bowie Blvd., 2-story brick, tile, stone trim hospital, air-conditioning, 1000 Montgomery St., $750,000. Plans deposit $25. Joseph R. Pelich, 1203 Comm. Standard Bldg., archt. CD 5/28/53.

HEAVY CONSTRUCTION—LB & CA

▲ **MacDonald Constr. Co.**, 1310 State St., St. Louis, Mo. and **Foster & Creighton Co.**, American National Bank Bldg., Nashville, Tenn. CA **$8,179,291.** est. $7,151,000. Contr. No. 7, airframe overhaul base 240x816 ft. bldgs. Mid-Continental International Airport, KANSAS CITY, MO. City, City Hall, Kansas City, Mo. Bids May 17, awarded June 15. CD 5/23, under LB.

† **Gustav Hirsch Organization, Inc.**, 1347 W. 5 Ave., Columbus, O., LB **$431,871.** est. $98,027, Fargo substation and modifications at Jamestown substation, Missouri River Basin Proj., Spec. DC 4405. NORTH DAKOTA. Bureau Reclamation, Dpt. Interior, Fargo, N. D. Bids June 8.

▲ **Hewitt-Robins, Inc.**, 270 Passaic Ave., Passaic, N. J. LB **$235,820.** install moving sidewalks for Airport Terminals DALLAS, TEX. City, City Hall, Main and Harwood Sts., Dallas, Tex. Bids June 7. CD 5/4;
Fischback & Moore of Texas, Inc., 1717 Baylor St., Dallas, Tex., LB **$524,000**, electrical work (Dallas, Tex.);
Kieffer Plumbing & Heating Co., 6411 Harry Hines Blvd., Dallas, Tex., LB **$1,307,000**, plumbing, heating, piping, ventilation and air-conditioning (Dallas, Tex.);
E. H. Reeder Constr. Co., Inc., 2128 Hawes St., Dallas, Tex., LB **$93,026**, outside area utilities and drainage (Dallas, Tex.).

▲† **W. E. Best and Joe A. Best, Jr.**, Box 1409, Wichita Falls, Tex., LB **$2,547,980**, est. $2,475,394, construct, manage, finance, FAMILY HOUSING, ENG-41-443-55-132, FORT HOOD and KILLEEN, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids June 16. CD 5/19.

BUILDINGS—LB & CA

▲ **C. Glenn Walker**, 515 2nd. Ave., Fort Dodge, Iowa, CA est. **$1,400,000.** Methodist HOME, FORT DODGE, IOWA Friendship Haven, Fort Dodge, Iowa. The Griffith Co., Warden Bldg., Fort Dodge, Iowa, archt. CD 10/20/54.

Walter Nashert Co., 16 N. 27 St., Oklahoma City 6, Okla. LB **$425,376** est. $700,000. 81x175 ft. face brick, structural steel CHURCH, Abrams and Ganwood Sts., DALLAS, TEX. St. Thomas Aquinas Church, 2122 Kidwell St., Dallas, Tex. Bids June 9. CD 6/2.

The Cato Corp., c/o C. Grady Cates, Jr., 9747 Harry Hines Blvd., Dallas, Tex., Owner Builds. **$365,000.** Job No. 7, 35 DWELLINGS: **$445,000**, Job 8, 45 dwellings, FARMERS BRANCH, TEX. CD 2/9.

† **Guy H. Baker Constr. Co.**, P. O. Box 446, Temple, Tex. LB **$843,969.** est. $879,863, four combined battalion motor repair SHOPS, ENG-41-443-55-130. FORT HOOD, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids June 16. CD 5/27.

▲ **Vest & Starkey, Builders**, 9714 Bassoon St., Houston, Tex., CA **$386,110**, (A) 28 DWELLINGS; CA **$359,910**, (B) 20 dwellings; CA **$389,810**, (C) 31 dwellings, Westbury Addn., HOUSTON, TEX. Vest & Starkey, 9714 Bassoon St., Houston, Tex. Grand total $1,135,830. CD 3/28.

Richmond Land Corp., c/o Letcher W. Helms, Helms Lumber Co., 5214 Airline St., Houston, Tex., Own Forces **$360,000**, sec. 2, 20 DWELLINGS: **$372,500;** Sec. 4, 26 dwellings, HOUSTON, TEX. CD 1/21.

▲ **Berglund-Cherne Co.**, 801 Curtis St., Denver, Colo. CA est. **$1,000,000.** 1 story, 45,000 ft. PLANT and office, Arapahoe Co., near here, DENVER, COLO. Minneapolis-Honeywell Regulator Co. 1600 W. 13 Ave., Denver, Colo. Toll & Milan, 2160 15 St., Denver, archts.

▲ **Stearns-Roger Mfg. Co.**, 660 Bannock St., Denver, Colo., Approx. **$5,000,000.** Design and constr. oil shale PLANT, GRAND JUNCTION, COLO. Union Oil Co. of Calif. Box 218, Brea, Calif.

FAR WEST

BUILDINGS—BA

▲ **Calif., Torrance**—FACTORY, etc.—BA 7/7—Douglas Aircraft Co., Inc., 827 Lapham St., El Segundo, aircraft factory and 3 existing bldgs. extens. $1,400,000. Plans deposit $50. Van Dyke & Barnes, 2234 Beverly Blvd., Los Angeles, engrs.

▲ **Calif., Los Angeles**—SCHOOL—BA 7/15—Los Angeles Bd. of Educ., 1425 S. San Pedro St., junior high school, 220 and Moneta Sts., Wilmington. $2,000,000. Albert C. Martin & Assocs., 333 S. Beaudry St., Los Angeles, archts. CD 4/29/54.

HEAVY CONSTRUCTION—LB & CA

▲† **Vega Engrg. & Grading Co.**, 1214 4th St., Berkeley, Calif., LB **$1,520,732.** est. $1,361,734, earthwork concrete lining and structures for Texas Hill canal and distr. sys., Gila Proj., Wellton-Mohawk Div., Spec. DC 4411, ARIZONA. Bureau Reclamation, Dpt. Interior, Yuma, Ariz. Bids June 9. CD 4/26.

WASHINGTON—State Hy. Comn., Olympia,
K. L. Goulter & Son, 3419 16 Ave. W., Seattle, Wash. CA **$529,671.** imprv. Primary St. Hy. 1, Skagit River to Chuckanut Dr., Skagit Co. Bids June 7. CD 6/13, under LB.

▲ **CALIFORNIA**—State Dpt. P. Wks., 1120 "N" St., Sacramento,
Gordon H. Ball, 300 Camille Ave., Danville, Calif., CA **$1,521,676.** 5.8 mi. of freeway on U. S. 99 between ½ mi. north of Earlimart and ½ mi. north of Pixley, Tulare Co. Bids May 2, awarded June 14. CD 6/2 under LB.

† **Swinerton & Walberg**, 1723 Webster St., Oakland, Calif., CA **$627,000.** (4 bidders) air turbine and compressor bldg., Naval Air Station, NOY 87429, Spec. 45262, ALAMEDA, CALIF. P. Wks. Officer, 12th Naval Dist. San Bruno, Calif. Bids June 1, awarded June 13. CD 6/14 under LB.

▲ **Fred J. Early, Jr.**, 22138 S. Vermont Ave., Torrance, Calif., LB **$639,865.** est. $625,000, Schedule V, water treatment plant, filters, clarifier, EL CENTRO, CALIF. City, El Centro, Calif. Bids June 8. CD 5/17;
Chicago Bridge & Iron Co., 612 S. Flower St., Los Angeles, Calif., LB **$163,910.** est. $165,000. Schedule VIII, 2 welded steel water tanks, 2½ m.g. each. (El Centro, Calif.);
Basich Bros., 1148 N. San Gabriel Blvd., San Gabriel, Calif., LB **$173,824**, est. $150,000, Schedule VI, raw water basins, etc., 70 m.g. storage capacity (El Centro, Calif.);
Glanville Plumbing Co., 3231 Belle Terrace, Bakersfield, Calif., LB **$171,000**, est. $160,000. Schedule VII, water transmission pipe lines, 15,000 ft. 18, 24 and 30 in. pipe (El Centro, Calif.)

Joseph Bettancourt, 1015 San Mateo Ave., San Bruno, Calif., CA **$781,184.** pipe fitters SHOP, Hunter Point Naval Shipyard, NOY 87432, Spec. 45265. SAN FRANCISCO, CALIF. Dpt. P. Wks. Officer, 12th Naval Dist., San Bruno, Calif. Awarded June 15. CD 6/14, under LB.

BUILDINGS—LB & CA

▲ **A. Balch**, 8050 35 Ave. N.E., Seattle, Wash., Day Labor, **$1,500,000.** 150 HOUSES, ALDERWOOD MANOR, WASH. CD 6/11/54.

▲ **North Terrace Rentals**, c/o Nelse Mortensen & Co., 1021 Westlake Ave. N., Seattle, Wash., Day Labor. **$1,000,000.** 100 HOUSES, MOSES LAKE, WASH. CD 5/24/54.

▲ **Terrace Homes, Inc.**, Moses Lake, Wash., Day Labor, **$1,000,000.** 100 HOUSES, MOSES LAKE, WASH. CD 5/24/54.

▲ **A. Balch**, 8050 35 Ave. N.E., Seattle, Wash. Day Labor. **$2,000,000.** 200 HOUSES, Wedgwood Addn., MOUNT VERNON, WASH. CD 9/17/54.

▲ **A. Balch**, 8050 35 Ave. N.E., Seattle, Wash. Day Labor. **$2,000,000.** 80 HOUSES in area between E. 72 and 75 Sts., 42 to 45 Aves., northeast, SEATTLE, WASH. CD 7/29/54.

Trend Homes, Inc., 3852 E. Colorado St., Pasadena, Calif. Owner Builds. **$514,400.** 51 frame DWELLINGS, Lear Ct., Blackwood St., Caldwell St., COVINA, CALIF. Harold Bissner, 3852 E. Colorado St. Pasadena, Calif. archt.

Steed Brothers, Box 350, Alhambra, Calif., LB **$549,400.** AUDITORIUM at San Fernando High School, San Fernando, LOS ANGELES, CALIF. Los Angeles Bd. of Educ., 1425 S. San Pedro St. Los Angeles, Calif. Bids June 9. CD 6/1.

McDonald Bros., 6060 Adams Blvd., Los Angeles, Calif. LB **$679,212.** (7 bidders) TEST STAND bldg., test shop and assoc. work, NIMBUS, CALIF. Aerojet General Corp., Nimbus, Calif.

Bollenbacker & Kelton, 945 N. LaBrea St., Los Angeles, Calif., CA **$566,500**, 55 frame, stucco DWELLINGS, Kellerton Dr., Craighton Ave., PUENTE, CALIF. Gain Corp., 945 N. LaBrea Ave., Los Angeles, Calif. Palmer & Krissel, 11757 San Vicente Blvd., Los Angeles, Calif., archts.

Bollenbacker & Kelton, 045 N. La Cienga St., Los Angeles, Calif., CA **$772,500.** 75 frame DWELLINGS, Flamstead Dr., Hollis and Eastleight Sts., PUENTE, CALIF. Gain Corp., 945 N. La Cienega St., Los Angeles, Calif. Palmer & Krisel, 11757 San Vincente Blvd., Los Angeles, Calif., archts.

CANADA

BUILDINGS—BA

Ont., Renfrew — FACTORY — BA 7/8 — Radio Corp. of America-Victor Ltd., 1001 Lenoir St., Montreal, Que. 50,000 sq. ft. television part mfg. factory. $500,000. Surveyer, Nenniger & Chenevert, 1440 St. Catherine St. W., Montreal, Que., engrs. CD 5/6.

HEAVY CONSTRUCTION—LB & CA

ONTARIO—Dpt. of Hys., Parliament Bldgs., Toronto,
Peel Constr. Co. Ltd., 75 Main St. W., Brampton, Ont., CA, **$558,224.** Contract 55-68, grading, culverts, gran. base 7 mi. Hy. 16 Ottawa to Jock River, Ottawa. Awarded June 13. CD 6/15, under LB.

L. Gordon Tarlton, 912 McEachran St., Montreal, Que., CA **$510,987**, structural steel, brick elementary SCHOOL, MOUNT ROYAL, QUE. Protestant School Bd., Town of Mt. Royal, c/o John Thredgold, 5538 Decelles St., Montreal 26, Que., Lawson & Betts, 660 St. Catherine St. West, Montreal, Que., archts. Awarded June 15.

BUILDINGS—LB & CA

Foundation Maritime Ltd., 135 Lower Water St., Halifax, N. S., CA, **$500,000.** salt water pumphouse and oil separating facilities, at OIL REFINERY, HALIFAX, N. S. Imperial Oil Ltd., 56 Church St., Toronto, Ont. G. R. McMillin, 445 S. Christian St., Sarnia, Ont., c/o owner, supt. Awarded June 13.

▲ **Hamilton Bridge Div., Bridge & Tank Co. of Canada Ltd.**, 231 Bay St., N. Hamilton, Ont., CA Total est. **$5,000,000.** structural steel for 1 story, 450x500 ft., WIRE MILL, HAMILTON, ONT. Steel Co. of Canada Ltd., Wilcox St., Hamilton, Ont. Norman Wagner & Assocs., 42 James St. N., Hamilton, Ont., engrs. Awarded June 13.

▲ **Dominion Hotels & Development Corp. Ltd.**, 67 Yonge St., Toronto, Ont. Owner Builds. **$3,500,000.** 10 story Torontian HOTEL, Wood and Alexander Sts., TORONTO, ONT. Page & Steele, 72 St. Clair Ave. W., Toronto, archts. Hooper & Yolles, 880 Bay St., Toronto, engrs. CD 2/10/54.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲ **Hewitt-Robins, Inc.**, 664 Glenbrook Rd., Stamford, Conn., U. S. A. CA **$1,250,000.** design and construct, conveyor and machinery sys. at Gua. INDIA. Indian Iron & Steel Co., Burnpur, India.

Proposed Projects

SEWERS, WASTE DISPOSAL

▲ **Ala., Birmingham**—City, Dpt. P. Imprvs., City Hall, garbage incinerator. **$3,000,000.** A. L. McWhorter, city engr.

(Continued next page)

▲ **N. Y., Brooklyn**—President Brooklyn Boro, Boro Hall, combined replacement relief sewer in Autumn Ave. from Pitkin to Sutter Aves., incl. siphon chamber; combined sewer in Autumn Ave. from Sutter to Fairfield Aves.; grading Autumn Ave. from Fairfield to Wortman Aves. from Stanley to Loring Aves. and from Linden Blvd. to Black Ave.; and regrading Autumn Ave. from Wortman to Stanley Aves., together with work incidental thereto, **$2,484,600.** CD 8/7/44.

▲ **N. Y., Mineola**—Bd. Supervs. Nassau Co., Old County Court House, sewers in Island Park, Harbor Isle and Oceanside Areas, **$8,951,000;** sewage collection district in East Rockaway, Malverne and Lynbrook Area, **$13,705,938.**

▲ **Tex., Dallas**—City, City Hall, Main and Harwood Sts., expans. of White Rock sewage disposal plant, **$2,000,000.** sanitary trunk sewer mains to serve several areas of the city, **$2,000,000.** CD 5/8/52.

BRIDGES

▲ **WASHINGTON** — Washington Toll Bridge Auth., Olympia,
floating concrete pontoon bridge across Lake Washington, Seattle. **$20,000,000.** C. E. Andrew, ch. engr. Bid call possible this fall. CD 2/6/50.

EARTHWORK, WATERWAYS

▲ **South Carolina**—Edisto-Hollywood Irrigation District Comn., c/o Sen. T. Allen Legare, 63 Broad St., Charleston, irrigation proj., Charleston Co. **$8,000,000.**

AIRPORTS

▲ **Minn., Minneapolis** — AIRPORT IMPRVS. — Minneapolis-St. Paul Metropolitan Airports Comn., R. Aldrich, exec. dir., 2429 University Ave., St. Paul, within next three years, turn-around maintenance hangar for Western Air Lines, $1,000,000. CD 6/16/54; terminal for admin. bldg., $4,000,000; ramp and taxiway for handling aircraft adjacent to Admin. Bldg., Wold Chamberlain Field, est. **$23,800,000.** CD 11/26/54.

▲† **Minn., Minneapolis** — OVERHAUL, MAINTENANCE and OPERATIONAL BASE — Minneapolis-St. Paul Metropolitan Airports Comn., 2429 University Ave., St. Paul, major overhaul, maintenance and operational base incl. terminal, $4,000,000; installation of high speed taxiways and other imprvs., $2,000,000; developing admin. area, $2,000,000, Wold Chamberlain Airport, **$15,000,000.** Northwest Air Lines, Inc. Lessee. (Correction-Owner's name). CD 6/13.

▲ **Minn., Minneapolis**—OVERHAUL, MAINTENANCE and OPERATIONAL BASE—Northwest Air Lines, Inc., D. W. Nyrop, pres., 1885 University Ave., St. Paul, constr. major overhaul, maintenance and operational base, incl. terminal, $4,000,000; installing high speed taxiways and other imprvs., $2,000,000; develop admin. area, $2,000,000, Wold-Chamberlain Airport. Total est. **$15,000,000.**

▲† **Wash., Moses Lake**—HANGAR—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, hangar, Larson Air Force Base. **$7,000,000.** Bids soon.

PUBLIC BUILDINGS

▲ **Ariz., Tucson**—SCHOOLS—Tucson School Dist. 1, Pima Co., Tucson, **$8,585,000** bond election July 12, new constr. and purchase sites for schools.

▲ **Calif., Santa Cruz**—SCHOOL—Santa Cruz Elementary & High School Dist., 133 Mission St., voted bonds, school addns. **$1,040,000.** CD 5/5/54.

▲ **Calif., Torrance**—SCHOOLS—Torrance Unified School Dist., Torrance, voted **$10,000,000** bond election June 7, 18 new elementary schools and 1 or 2 high schools. CD 5/25.

▲ **Mass., West Newbury and Groveland**—SCHOOL—Pentucket Regional School Dist., J. C. Jakobek, c/o Harry J. Korslupd, archt., 506 Washington St., Norwood, Regional Junior Senior High School, Rte. 113. **$1,000,000.** CD 5/16.

▲ **Mich., Plainwell** — SCHOOL — Bd. Educ., Plainwell School Dist., voted **$1,250,000** bonds June 8, junior high school, 2 elementary schools. Louis C. Kingscott & Assoc., 511 Monroe St., Kalamzaoo, archts. CD 6/3.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-13 Crescent St., Long Island City, plans by Emery Roth & Sons, 575 Madison Ave., New York, Zone 22, Proj. E-770, junior high school 278 in Sheepshead Bay, Marine Park area, **$3,000,000.** CD 1/20.

▲ **N. Y., Enidcott**—LABORATORY, etc.—State, Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany, site preparation, instructional, laboratory, physical education, related facilities, auditorium ,heating plants, service connections, imprvs. to grounds for Harpur College for Dpt. Educ. **$3,700,000.**

▲ **N. Y., Malverne**—SCHOOL—Unified School Dist. No. 12, Hempstead, high school, Ocean Ave., on 38 acre tract, **$2,285,000.** Proposition to be voted on June 22.

▲ **N. Y., Sayville**—SCHOOL—Bd. Educ., Green Ave., high school, **$2,850,000;** elementary school, **$965,000.** Project approved June 6. CD 5/11.

▲ **N. C., Raleigh**—OFFICE—State Bd. P. Bldgs. & Grounds, George Cherry, Agriculture Bldg., motor vehicles department office on Newbern Ave. **$1,000,000.**

▲ **O., Campbell**—SCHOOL—Bd. Educ., school in Roosevelt Park area, gymnasium for Memorial High School, renovate present schools, **$1,250,000.** CD 11/17/47.

▲ **Pa., Elkins Park**—SCHOOL—Cheltenham Twp. School Bd., Elkins Park, high school, **$4,500,000.** CD 4/1/54.

▲ **Wash., Pullman**—VETERINARY CLINIC—Washington State College, Pullman, plans by Culler, Gale & Martell, Realty Bldg., Spokane, veterinary clinic bldg. addn. **$1,145,000.** CD 4/14/54.

▲ **Wis., Milwaukee**—HIGH SCHOOL—School Bd., 1111 N. 10 St., plans by M. W. Meyer & Assocs., 424 E. Wells St., West Division High School, **$2,500,000-$3,000,000.** R. J. Strass, 225 E. Michigan St., consult. engr. CD 6/14/54.

▲ **Wyo., Thermopolis**—SCHOOL—Hot Springs School Dist., Thermopolis, voted bonds, high school and gymnasium, **$1,000,000.** Tresler & McCall, Box 900, Cody, Wyo., archts. CD 5/11.

COMMERCIAL BUILDINGS

▲ **Calif., Fresno**—HOSPITAL—Fresno Community Hospital, 1234 S St., hospital alterations and addns., **$4,425,817.** CD 10/17/47.

▲ **Calif., Reseda**—DWELLINGS—Bonnie Brae Gardens, 8906 W. Olympic Blvd., 96 frame, stucco dwellings, Sylvia and Schoolcraft Sts. **$1,000,000.**

▲ **Calif., Reseda**—DWELLINGS—Hirsch-Edmonds Building Co., 246 S. Robertson St., Beverly Hills, 123 frame, stucco dwellings near Tampa St. and Victory Blvd. **$1,300,000.**

▲ **Calif., Sacramento**—HOTEL—Heraty and Gamon, 3625 MacArthur Blvd., Oakland, hotel, junction of Sacramento and Elvas Freeways. **$5,000,000.**

▲ **Calif., San Francisco**—MOTEL-HOTEL-APARTMENT—Bryan Epps & Assoc., 1800 Broadway, plans by George Meu, 1638 Market St., motel-hotel-apartment, garage bldg., 200-stall garage. **$1,500,000.** R. H. Fuller, 1638 Market St., consult. engr.

▲ **Calif., Van Nuys**—DWELLINGS—La Cienega Homes, 5656 W. 3 St., Los Angeles, 127 frame and stucco dwellings in the Van Nuys Dist. **$1,380,000.**

▲ **Calif., Van Nuys**—DWELLINGS—West American Constr. Co., 5171 W. Washington St., Los Angeles, plans by LaGrace & Assoc., 5333 Sepulveda Blvd., Culver City, 125 frame, stucco, and brick stone veneer dwellings, Hayvenhurst Ave. and Tupper Sts. **$1,250,000.**

▲ **Colo., Denver**—SCHOOL FACILITIES—Regis College W. 50 and Lowell Blvd., plans by Edwin A. Francis, consult. engr.-archt., 218 E. Speer Blvd., school facilities expansion. **$1,000,000.**

▲ **Ind., Upland**—DORMITORY, etc.—Bd. Trustees, Taylor University, Upland, men's dormitory and food service unit, **$600,000;** science bldg., **$4,000,000;** other planned bldgs., incl. classroom bldg., admin. bldg., student union, health center, observatory, president's home, etc.

▲ **Md., Baltimore**—OFFICE—North Ave. Corp., c/o Jullan Contg. Co., 3945 Greenmount Ave., Zone 18, plans by Taylor & Fisher, 1012 Calvert St., Zone 2, 10 story, 100x175 ft., steel, masonry 110,000 sq. ft. office, 5 story garage in rear, 13 and 15 W. North Ave., **$3,250,000.**

▲ **N. J., West Orange**—SHOPPING and COMMERCIAL CENTER—Nassau Management Co., Inc., 5 Beekman St., New York 7, N. Y., shopping and commercial center, on 190-acre tract on Prospect Ave. between Mt. Pleasant and Eagle Rock Aves. **$20,000,000.**

▲ **N. Y., Elmhurst**—APARTMENT—Silman Hall Apartments, 116-55 Queens Blvd., Forest Hills, N. Y., 6 story apartment, Broadway and Dongan Ave. **$1,500,000.**

▲ **N. Y., New York**—OFFICE—153 E. 57 St., Inc., 47 White St., Zone 13, plans by Paul Resnick, 654 Madison Ave., Zone 21, 24-story office, 153 E. 57 St., **$2,900,000.**

▲ **N. Y., New York**—APARTMENT—176 E. 77 St. Corp., 654 Madison Ave., Zone 21, plans by Sylvan Bien, 33 W. 46 St., Zone 19, 17 story apartment at 1334-1344 Third Ave., southwest corner of 77 St., **$2,000,000.**

▲ **Pa., Bryn Mawr**—SCIENCE CENTER—Bryn Mawr College, Bryn Mawr, plans by Martin-Stewart & Noble, 117 S. 17 St., Phila., science center. **$1,600,000.** CD 6/9.

▲ **Tex., Austin**—DWELLINGS—Builders Development Corp., S. R. Sheppard, Littlefield Bldg., (A) 9 dwellings, **$360,000;** (B) 30 dwellings, **$390,000;** (C) 25 dwellings, **$364,000;** (D) 10 dwellings, **$400,000;** (E) 28 dwellings, **$372,425;** (F) 15 dwellings, **$375,000;** (G) 20 dwellings, **$365,000;** (H) 34 dwellings, **$384,518,** in southeast Austin.

▲ **Tex., Dallas**—SHOPPING CENTER—Cothrum-Murray Co. Inc., c/o W. H. Cothrum, 2116 N. Field St., shopping center, 50-acre tract, Garland Rd. and Jupiter Lane to be known as "Lochwood Regional Shopping Center." **$10,000,000.**

▲ **Tex., Houston**—DWELLINGS—Campbell Wood Building Co., Inc., 9130 Jensen St., 24 brick dwellings, **$371,000;** 27 frame, masonry dwellings, **$358,500;** 35 frame dwellings, **$375,000;** 30 frame dwellings, **$368,000** in Cronican Manor area.

▲ **Tex., Houston**—DWELLINGS—Elton Brimberry, 4363 Rosslyn St., 20 brick and stone dwellings, **$381,115;** 15 all brick dwellings, **$361,150;** 18 stone dwellings, **$376,485;** plans by H. H. Wright & Duane Meyers, 4363 Rosslyn St., 13 brick dwellings, **$348,925;** 22 stone, brick trim dwellings, **$398,750** in Sec. 18, Oak Forest Addn.

▲ **Tex., Houston**—OFFICE—Cecil Hagen, Gulf Bldg. Annex, 10-story office, corner University Blvd. and Greenbriar Dr. **$1,500,000.**

▲ **Tex., Houston**—DWELLINGS—Joe A. Higginbotham Building Co., 2121 Rosslyn St., 20 brick and stone trim dwellings **$375,000;** 21 stone and brick trim dwellings, **$385,175;** plans by H. H. Wright and Duane Meyers, 2121 Rosslyn St., 14 all brick dwellings, **$364,000;** 18 brick and stone dwellings, **$374,500;** 16 all-stone dwellings, **$386,000** in Sec. 18, Oak Forest Addn.

▲ **Tex., Houston**—DWELLINGS—Jack Perry & Ralph Merion, 1110 Prospect St., Sec. 1, Job. 1, 40 frame dwellings, **$350,000;** Job. 2, 37 frame dwellings, **$363,000;** Job. [illegible], 34 frame dwellings, **$354,910;** Job. 4, 41 frame dwellings, **$360,000;** Job. 5, 36 frame dwellings, **$345,750;** Job. 6, 46 frame dwellings, **$384,400;** Job. 7, 48 frame dwellings, **$395,425;** Job. 8, 44 frame dwellings, **$376,500;** Job. 9, 50 frame dwellings, **$415,000** off 9700 blk. Wallisville Rd., near here.

▲ **Tex., Houston**—MOTEL, etc.—Dow J. Zabolio, 6115 LaSalette St., plans by Woodrow W. Alexander, 2008 W. Alabama St., 40-unit motel, **$350,000;** commercial bldg., **$700,000** on Old Spanish Trail, area of LaSalette St.

▲ **Tex., Pasadena**—DWELLINGS—Queens Oak Corp., c/o Izzy Redman and Bob Davis, 3314 Prospect St., Houston, 25 dwellings, **$377,500;** 18 dwellings, **$345,000;** 28 dwellings, **$381,000;** 22 dwellings, **$368,500;** 20 dwellings, **$375,000.**

▲ **Utah, Salt Lake City**—OFFICE—Mountain Fuel Supply Co., 36 S. State St., office. **$1,000,000.**

▲ **Alta., Calgary**—OFFICE—Triad Oil Co. Ltd. Calgary, plan by Rule, Wynn & Rule, 513 8th Ave. W., 4 story, 100x130 ft. rein.-con. office, southeast corner 7th Ave and 5th St., with provision for addnl. 4-stories. **$1,000,000.**

▲ **Ont., London**—OFFICE—Northern Life Assurance Co., R. G. Ivey, pres., Northern Life Bldg., plans by O. Roy Moore & Co., 260 Dundas St., 8 story brick steel head office addn. **$1,000,000.**

▲ **Ont., Roseland**—DWELLINGS—Sun Parlor Homes Ltd., Glen Mair, mgr., Roseland, 150 ranch-type dwellings, **$1,875,000.**

▲ **Que., Montreal**—APARTMENTS, etc.—Henry & William LeRadza, 3417 Melrose St., Montreal, 36x153 ft., 150 studio apartments, department store and restaurant, Sherbrooke St. corner Peel St. **$2,500,000.**

INDUSTRIAL BUILDINGS

▲ **Mass., Peabody** — INDUSTRIAL DEVELOPMENT — Cabot, Cabot & Forbes, Inc., 60 State St., Boston, industrial development Rte. 128. **$1,500,000.**

▲ **Minn., St. Paul**—PLANT—Engineering Research Assn. of St. Paul, div. of Remington Rand, W. C. Norris, vice pres., 543 St. Peter St., plans by Ellerbe & Co., E. 505 First National Bank Bldg., 200,000 sq. ft. electronics plant between W. 7 St. and Davern St. Norfolk Ave. and Mississippi River, **$2,000,000.** CD 4/8.

▲ **N. Y., Amherst**—PLANT—Sylvania Electric Products, Inc., 1740 Broadway, New York, Zone 19, 1 story, brick, steel plant with 2 story offices and laboratory, Wehrle Dr. and Cayuga Rd., site optioned. Subject to rezoning. **$7,000,000-$10,000,000.**

▲ **O., Akron**—ENGINEERING and RESEARCH BLDG.—Goodyear Aircraft Corp., 1144 Market St., 3 story, 125x400 ft. engineering and research bldg., **$3,000,000.** CD 12/3/52.

▲ **O., Lima**—PLANT—Ford Motor Co., 3000 Schaefer St., Dearborn, Mich., 950,000 sq. ft. engine plant, **$10,000,000.**

▲ **Wash., Cosmopolis**—MILL—Weyerhaeuser Timber Co., Tacoma Bldg., Tacoma, pulp mill. **$20,000,000.** CD 3/16.

▲ **Ont., Blind River**—MILL—Buckles Algoma Uranium Mines Ltd., 44 King St. W., Toronto, mill in uranium mining area. **$3,800,000.** Technical Mine Consultants Ltd., 44 King St. W., and R. M. Way & Co. Ltd., 696 Yonge St., Toronto, consult. engrs.

▲ **Ont., Des Joachims**—POWER PLANT—Atomic Energy Comn. of Canada Ltd., Tunney's Park, and Canadian General Electric Co., 175 Richmond St., Ottawa, nuclear power plant on Ottawa River. **$13-$15,000,000.**

UNCLASSIFIED

▲ **Colorado**—GENERATING PLANT, etc.—Colorado-Ute Electric Assoc. Inc., Montrose, steam generating plant and 165 mi. 115 kv transmission line and related facilities, Montrose Co. **$10,155,000.** REA allot.

▲ **Tenn., Memphis** — RAILWAY YARD — St. Louis-San Francisco Ry. Co., E. L. Anderson, Ch. Engr., 309 N. Jefferson St., Springfield, Mo., Tennessee Yard at Capleville, near here, incl. 50 classification tracks, office, locker room, hotel, sewage disposal plant, water sys., diesel shop and other facilities. **$10,000,000.** Work will start July 1.

▲ **Texas-Oklahoma**—GAS MAIN—Natural Gas Pipeline Co. of America, 20 N. Wacker Dr., Chicago, Ill., 350 mi. gas main exten. from N. E. Okla., running across Okla. and to Fritch in Texas Panhandle. **$28,500,000;** building gas gathering pipe line sys. in North Texas, radiating from Jacksboro area, Jack Co. **$3,250,000.** CD 10/6/54.

Tex., Houston—MAUSOLEUM—Garden of the Good Shepherd, Lawnview Development Corp., c/o J. E. Shine, Dairy-Ashford Dr., mausoleum, **$800,000;** developing 100-acre cemetery site, grading, general earthwork, filling, drainage, roads, water lines, **$200,000.**

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HEAVY CONSTRUCTION—BA

▲ **MASSACHUSETTS**—BA 7/13—Massachusetts Turnpike Auth., 80 Boylston St., Boston,

West Springfield — Contr. 51-195, hy. and bridge. $2,000,000. Plans deposit $100. Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, engrs. CD 8/16/54.

BUILDINGS—BA

▲ **Me., Topsham**—OPS AND POWER BLDGS.—BA 7/7—Western Electric Co., 195 Broadway, New York, N. Y., OPS and power bldgs., assoc. facilities, $3,000,000. Burns & Roe, 233 Broadway, New York, N. Y., archts.

▲ **Mass., Worcester**—OFFICE—BA 7/11—State Mutual Life Assurance Co., 340 Main St., home office, Converse Estate, 412 Lincoln St., $6,000,000-$7,000,000. Plans deposit $200, refundable. Cram & Ferguson, 248 Boylston St., Boston, archts. CD 3/24/54.

▲ **Mass., Hyannis**—SCHOOL—BA 7/21—Town of Barnstable, H. H. Broadbent, supt. schools, 397 Main St., high school, W. Main St., $2,440,000. Walter M. Gaffney, W. Main St., Hyannis, archt. CD 4/1, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS** — Massachusetts Turnpike Auth., 80 Boylston St., Boston,

C. J. Langenfelder & Son, Inc., 8427 Pulaski Hy., Baltimore, Md. LB **$8,746,884.** Contr. 51-082, hy. and bridge constr., Millbury and Auburn. Bids June 21. CD 6/1.

▲ † **The Nicholson Co., Inc.**, 10 Rockefeller Plaza, New York, N. Y. CA **$1,503,750**, est. $1,500,000-$1,750,000, special AAA facilities, Danvers, Topsfield and Bedford, ENG-19-016-55-40, MASSACHUSETTS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 6/15, under LB.

▲† **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York, N. Y. CA **$3,076,588.** reconstr. marginal pier No. 11 Naval Shipyard, NOY 85264, Spec. 43308 (Rev), Charlestown, BOSTON, MASS. First Naval Dist., 495 Summer St., Boston, Mass. CD 6/16, under LB.

▲† **John A. Volpe Constr. Co., Inc.**, 54 Eastern Ave., Malden 48, Mass. LB **$2,311,246**, Item 1; **$2,293,648**, Item 2; **$2,277,739**, Item 3, hangar expansion, U. S. Naval Air Station, NOY 81092, Spec. 40015, WEYMOUTH, MASS. Dist. P. Wks. Office, IND, 495 Summer St., Boston 10, Mass. Charles A. Maguire & Assoc., 294 Washington St., Boston, Mass., engrs. Bids June 21. CD 5/25.

BUILDINGS—LB & CA

▲ **Koufman Constr. Co.**, 20 Pemberton Square, Boston, Mass., Separate Contracts, est. **$1,000,000.** SHOPPING CENTER American Legion Hy., exten. from Mt. Hope St. to Canterbury St., Roslindale, BOSTON, MASS. CD 12/29/54.

▲ **Martin Cerel**, 18 E. Central St., Natick, Mass. Separate Contracts. **$3,000,000.** RESIDENTIAL DEVELOPMENT, incl. 224 units opposite municipal golf course, BROCKTON, MASS. CD 2/25.

Christopher I. Cox & Co., 481 High St., Medford, Mass. Separate Contracts, **$962,000.** RESIDENTIAL DEVELOPMENT, 48 houses, Elm Park, CONCORD, MASS.

▲ **Aquadro & Cerruti, Inc.**, Texas Rd., Northampton, Mass. CA **$1,178,227**, est. $1,750,000. senior high SCHOOL, SOUTH HADLEY, MASS. Town, School Dpt., 38 Carew St., South Hadley, Mass. CD 6/20, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—LB & CA

▲ **Wallace J. Wilck, Inc.**, 1001 State St., Perth Amboy, N. J., LB **$598,420**, Alt. A; LB **$597,920**, Alt. B; LB **$597,670**, Alt. C; LB **$597,170**, Alt. D, (3 bidders) Contr. 14, general constr., Sayreville Pumping Station, NEW BRUNSWICK, N. J. Middlesex County Sewerage Auth., 103 Bayard St., New Brunswick, N. J. Bids June 17. CD 5/12.
Charles Simkin & Sons, Inc., 95 New Burns Ave., Perth Amboy, N. J., LB **$422,237**, Alt. A; LB **$441,934**, Alt. B, (4 bidders), Contr. 14B, plumbing, piping and pumps; (New Brunswick, N. J.)
Ernest Jarvis & Co., 236 Chestnut St., Newark, N. J. LB **$102,281**, Alt. A, LB **$98,381**, Alt. B, for Contr. 14D, electrical work (New Brunswick, N. J.)

▲ **Hull Electric Co.**, 102 Main St., Bradford, Pa. CA **$1,865,000.** Contr. 3, installation of electrical work in chlorinator house, BRADFORD, PA. Bradford City Water Auth., City Hall, Bradford, Pa. Bids Apr. 18. CD 3/22.

▲† **Construction Service Co.**, Box 311, Bound Brook, N. J. LB **$1,628,603.** Schedule D, combination of Schedules A, B and C; LB **$679,890.** Schedule A, water supply sys. Letterkenny Ordnance Depot, ENG-18-020-55-62, LETTERKENNY, PA. U. S. Eng., E. O. Box 1715, Baltimore 3, Md. Bids June 17. CD 5/20;
E. D. Plummer & Sons, Inc., 961 S. Main St., Chambersburg, Pa. LB **$472,920.** Schedule B (Letterkenny, Pa.);
Moseman Constr. Co., 2311 Walnut St., Hollidaysburg, Pa. LB **$258,862.** Schedule C, (Letterkenny, Pa.).

▲† **U. S. Eng.**, 2635 Abbottsford Rd., Phila., Pa. Own Forces, **$1,190,795.** maintenance dredging Delaware River, 36-109-55-73, New Castle Co., DELAWARE. CD 12/31/52.

BUILDINGS—LB & CA

▲ **Merrill Constr. Co., Inc.**, 1377 Main St., Buffalo, N. Y. Owner Builds. **$1,800,000.** 67 rambler type HOMES south of Sheridan Dr. near North Forest Rd., AMHERST, N. Y. CD 6/21/44.

▲ **Linkwood At Baldwin Park Homes**, c/o Charles Lee Kaester, archt., 679 A Hempstead Turnpike, Franklin Square, N. Y. Owner Builds. Est. **$2,600,000.** 100 HOUSES on tract on Grand Ave. near Southern State Parkway, BALDWIN, N. Y.

▲ **Morley Terrace Homes**, c/o Klein & Parker Realty, Co., Inc., 1391 Northern Blvd., Roslyn, N. Y. Owner Builds, **$2,400,000.** 200 HOUSES on tract at Washington Ave. and Ardmore Drive, BRENTWOOD, N. Y.

▲ **Sokolov Bros. & Sons**, 364 Conklin St., Farmingdale, N. Y. CA Est. **$1,300,000.** 85 HOUSES on 53 acre tract at Fifth Ave. near Larkfield Rd., EAST NORTHPORT, N. Y. Marlen Homes, c/o contractor. Herman York, 90-04 161 St., Jamaica, N. Y., archt. CD 5/19, under CD.

▲ **Wilshire Manor Homes**, c/o N. M. Obedin Co., 124 Jackson St., Hempstead, N. Y. Owner Builds. Est. **$1,200,000.** 75 HOUSES on tract at South Grove and Jefferson Sts., FREEPORT, N. Y.

▲ **Solow & Frank**, c/o Trylon Realty Co., 98-89 Queens Blvd., Forest Hills, N. Y. Owner Builds. Est. **$1,000,000.** 80 HOUSES on 37 acre tract at Fifth Ave. and Peconic St., ISLIP, N. Y.

▲ **Kalikow Constr. Co.**, 16 Court St., Brooklyn 2, N. Y. CA Est. **$2,000,000.** three 7 story APARTMENTS on tract bounded by 129 St., 141 St., 83 Rd. and Main St., KEW GARDENS, N. Y. Kew Gardens, c/o contractor, Seelig & Finekstein, archts., 153 Pierrepont St., Brooklyn 2, N. Y.

▲ **Joseph P. Blitz, Inc.**, 1 E. 57 St., New York 22, N. Y. CA Est. **$30,000,000.** 43-story OFFICE, 399 Park Ave., 53 to 54 Sts., NEW YORK, N. Y. 399 Park Avenue Corp., c/o contratcor. Kahn & Jacobs, 2 Park Ave., New York 16, N. Y., archts. Severud-Elstad-Krueger, 415 Lexington Ave., New York 17, N. Y., struct. engrs., Jaros, Baum & Bolles, 415 Lexington Ave., New York 17, N. Y., mech. engrs. CD 4/12.

▲ **Oakdale Green Homes**, c/o Edelson Realty Co., Inc., 109 W. Main St., East Islip, N. Y. Owner Builds. Est. **$6,000,000.** 500 HOUSES on 276 acre tract at Sunrise Hy. and Locust Ave., OAKDALE, N. Y.

▲ **Rosewood Gardens Homes**, c/o Long Island Homes, 168-12 Hillside Ave., Jamaica 32, N. Y. Owner Builds. **$1,700,000.** 102 HOUSES on tract at Boundary Ave. east of Hicksville Rd., PLAINEDGE-WANTAGH, N. Y.

▲ **Crossway Constr. Co., Inc.**, Roxbury Drive and Remsen Rd., Yonkers, N. Y. CA Est. **$1,000,000.** 66 HOUSES on tract at Crisfield St. and Scarsdale Rd., YONKERS, N. Y. Park Knoll at Crisfield Homes, c/o contractor.

▲ **Dunn Estates, Inc.**, 3150 Randall Ave., New York, N. Y. and Rte. 530, Berkeley Twp., N. J. Separate Contracts. **$2,100,000.** RESIDENTIAL development, Rte. 530, Berkeley Twp., SEA GIRT, N. J. Robert B. Myers, Sea Girt, N. J., archt.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa. CA **$3,000,000.** DEPARTEMENT STORE and parking area, ARDMORE, PA. Ardmore Shopping Center, c/o Albert M. Greenfield & Co., Bankers Security Bldg., Phila, Pa., Thalheimer & Weitz, Bankers Security Bldg., Phila., Pa., archts., N. Snellenburg & Co., Lessee. Bids June 9. CD 6/7.

▲ **Goodman & Bell, Inc.**, 12 and Washington Sts., Allentown, Pa. LB **$1,335,000.** general contract, joint junior senior high SCHOOL, BOYERTOWN, PA. Boyertown Area Joint School Dist., Boyertown Pa. Elmer H. Adams, 210 E. 37 St., Reiffton, Pa., archt. Allabach & Penis, Inc., 16 St. Broad St., Phila., Pa., engr. Bids June 15.

▲ **DePaul Bros.**, Lafayette Hills, Pa. Separate Contracts. **$1,500,000.** RESIDENTIAL DEVELOPMENT incl. 100 units, off Rte. 202, BUCKINGHAM, PA. A. Harold Gregory, 6118 Green St., Phila., Pa., archt.

▲ **Newport Realty Co.**, 612 Washington Ave., Phila., Pa. Separate Contracts, **$2,000,000.** RESIDENTIAL DEVELOPMENT, Bensalem Twp., CORNWELL HEIGHTS, PA.

▲ **Ring Engineering Co.**, Lewis Tower Bldg., Phila., Pa. CA **$3,000,000.** APARTMENT 364 units offices, stores, garage, PHILA., PA. Ambassador Town House, Inc., Lewis Tower Bldg., Phila., Pa. George S. Idell, 117 S. 17 St., Phila., Pa., archt. DiStasio & Van Buren, 136 Liberty St., New York 6, N. Y., engrs.

▲ **Mullan Contg. Co.**, 3945 Greenmount Ave., Baltimore, Md. CA **$3,250,000.** 10 story, steel, aluminum, masonry OFFICE, 5 story parking garage, BALTIMORE, MD. 15 West North Avenue Corp., Charles A. Mullan, pres., 3945 Greenmount Ave., Baltimore 18, Md. CD 6/17.

▲ **Skinker & Garrett**, 2607 Connecticut Ave., N. W. Wash. D. C., CA est. **$1,100,000.** BUILDING ADDN. and alteration, WASH. D. C. Electrical Workers' Benefit Assn., 1200 15th St., N. W. Wash., D. C., Mills, Petticord & Mills, 3308 14th St., N. W. Wash., D. C., archts.

▲ **Ashbourn Hills, Inc.**, c/o Harry Rubenstein, 703 Equitable Bldg., Wilmington, Del. Separate Contracts. **$1,000,000.** RESIDENTIAL development, Darley Rd. CLAYMONT, DEL.

SOUTH

BUILDINGS—BA

Ala., Enterprise—HIGH SCHOOL—BA 7/19—Bd. Educ., Enterprise, Enterprise High School. $610,000.

HEAVY CONSTRUCTION—LB & CA

† **J. L. Coe Constr. Co.**, Builders Bldg., Charlotte, N. C., LB **$677,673.** auditorium and navy exchange, Naval Air Station, NOY 85871. Spec. 43057, OCEANA, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids June 16. CD 6/1.

† **Atlantic, Gulf & Pacific Co.**, 15 Park Row, New York, N. Y., CA **$944,082**, dredging in Charleston Harbor, 38-081-55-10. SOUTH CAROLINA. U. S. Eng. Customhouse, Charleston, S. C. Bids June 1. CD 6/16, under LB.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort,

Breslin Constr. Co., 1433 S. Preston St., Louisville, Ky. CA **$1,784,357.** (3 bidders) bit. conc. Class I surf. 14.218 mi. Hopkinsville-Clarksville Rd., F 306 (8), FG 306 (9), SP 24-125, Christian Co. CD 6/21, under LB.

Carrothers Constr. Co., Paola, Kan. LB **$830,500.** Contrs. A & C sewage pump stations, sewage treatment plant, PADUCAH, KY. City, Paducah, Ky. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. Bids June 10. CD 11/8/54.

† **Olive & Meyer & Son**, 1115 Polans Ave., New Orleans, La. LB **$524,900** (2 bidders) utility lines, water, natural gas and sanitary sewers at Joint Air Reserve Training Center, NOY 81840, Spec. 42089, NEW ORLEANS, LA. Eighth Naval Dist., Bldg. 16, Naval Station, (Algiers), New Orleans, La. Bids June 9. CD 5/12.

BUILDINGS—LB & CA

▲ **Crestwood Constr. Corp.**, 4415 Wilson Blvd., Arlington, Va. Own Forces. est. **$5,000,000.** 350 HOMES, 110-acre tract off Braddock Rd., to be known as "Crestwood Park" FAIRFAX, VA.

▲ **Neighborgall Constr. Co.**, 308 Chafin Bldg., Huntington, W. Va., CA **$1,125,000.** STORE, warehouse, service station, parking area, HUNTINGTON, W. VA. Sears Roebuck & Co., 821 4th Ave., Huntington, W. Va. and 27 51st St., Pittsburgh, Pa. Dittrich and Gibson, 8 S. Michigan Ave., Chicago, Ill. archts.

▲ **A. B. Newton**, Box 191, Vidalia, Ga., LB **$1,126,314.** Haralson County elementary and high school (colored) Poplar Springs, Buncombe Steadman elementary and high school (white), Buncombe Elementary School (white), Draketown elementary school (white), Felton elementary school (white) and Buchanan Elementary and High School addn. (white), Haralson Co. BUCHANAN, GA. State School Bldg. Auth., Kemper Bldg., 41 Exchange Pl., S. E. Atlanta, Ga. Bids June 21. CD 5/27.

† **T. A. Loving & Co.**, Bank of Wayne Bldg., Goldsboro, N. C., LB **$717,184**, AMMUNITION STORAGE facility, ENG-31-075-55-56. FORT BRAGG, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids June 14. CD 5/10.

Coit Somers, Box 111, Vidalia, Ga., LB **$899,500.** Harrisburg Elementary SCHOOL, Baldwin County Negro High School; Baldwin County White High School; Carver Elementary School addn., Midway Elementary School addn., MILLEDGEVILLE, GA. State School Bldg. Auth., 41 Exchange Pl., S. E., Atlanta, Ga. Bids June 16. CD 5/10.

▲† **J. M. Brown Constr. Co.**, 1012 Spring St., Shreveport, La. LB **$1,178,000.** (3 bidders) Veterans Administration HOSPITAL, alteration, addn., conversion, ALEXANDRIA, LA. Veterans Administration, Munitions Bldg., Wash. D. C. Bids June 21. CD 4/29.

▲† **Clark Constr. Co.**, 1919 Parrish Ave., Owensboro, Ky. LB **$3,669,515.** 300 HOUSING units, FORT CAMPBELL, KY. U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn. Bids June 21. CD 5/24.

▲† **Blount Brothers Constr. Co.**, Bell Bldg., Montgomery, Ala., CA **$2,238,000** est. $2,309,200. (6 bidders), RESEARCH REACTOR BLDG. 3042 in. X-10 Area, Inv. 401-55-6A. OAK RIDGE, TENN. U. S. Atomic Energy Comn., P. O. Box E, Oak Ridge, Tenn. Bids June 2. CD 5/18.

MIDDLE WEST

BUILDINGS—BA

▲ **Mich., Port Huron**—SCHOOL—BA 7/26—City, Howard D. Crull, Bd. of Educ., 602 Park St., high school, $1,808,000, Louis C. Kingscott & Assoc. 511 Monroe St., Kalamazoo, archts., Wyeth & Harman, Inc., 1602 Military St., engr., CD 1/3/55.

▲ **O., Bowling Green**—STUDENT UNION—BA 7/26—Dpt. P. Wks., 705 Ohio Dpts. Bldg., Columbus, student union, Bowling Green State University. Plans deposit $25. Sims, Cornelius & Schooley, 2901 N. High St., Columbus, engrs.-archts. H. G. Allen, cons. archt., Div. State Arch. and Engr. CD 5/5.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—State Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield,

M. Hoeffken Co. & Hoeffken Bros., 222 W. B. St., Belleville, Ill., CA **$1,959,559**, 7.63 mi. addnl. 2-lanes, P. C. C. pavement on U. S. 66, Madison Co. Bids May 20, awarded June 20. CD 5/26 under LB.

▲ **Paschen Contractors Inc.**, 2739 Elston St., Chicago, Ill., LB, **$1,742,000.** waterworks addns., EVANSTON, ILL. City, City Hall, Evanston, Ill. Bids May 26. CD 5/19.

BUILDINGS—LB & CA

▲ **George Bills, Jr.**, Bills Constr. Co., 531 Washington St., Akron, O. Owner Builds. Est. **$1,500,000.** 125 HOMES in Ardmore Allotment, southeast of here, AKRON, O.

▲ **H. K. Ferguson Co.**, 1783 E. 11 St., Cleveland, O. CA 300,000 sq. ft. engine PLANT No. 2, Brook Park, CLEVELAND, O. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich.

▲ **B & B Constr. Co.**, 1616 Covington St., Youngstown, O. CA total est. **$1,450,000,** general work high SCHOOL, NILES, O. Bd. Educ., S. J. Benham, supt., Niles, O. Awarded June 10. CD 11/10/54;
Commercial Piping Co., 85 E. Hylda St., Youngstown, O. CA interior plumbing work. (Niles, O.);
Valley Plumbing & Heating Co., Niles, O. CA outside plumbing site work (Niles, O.);
Stefanak & Sons, Farrell, Pa. CA heating and ventilating work (Niles, O.);
Church & Murdock, Erie, Pa. CA electrical work (Niles, O.).

▲ **Peter Becker**, 602 Detroit St., Hammond, Ind., CA **$1,500,000.** HOSPITAL ADDN., HAMMOND, IND. St. Margeret's Hospital, 26 Douglas St., Hammond, Ind. Bids May 26, awarded June 14. CD 5/13.

▲ **Maconaquah Development Corp.**, Peru, Ind., Owner Builds, **$1,250,000.** 100 HOMES in Catey Addn. PERU, IND.

▲ **Mills & Sons, Inc.**, 7610 W. Grand St., Elmwood Park, Ill. Own Forces. **$1,000,000.** 40 HOMES, ARLINGTON HEIGHTS, ILL.

Kasper Constr. Co., 1203 N. 16 St., Manitowoc, Wis., CA, **$738,859,** Lincoln High SCHOOL, MANITOWOC, WIS. Bd. of Educ., Manitowoc, Wis. Bids June 14. CD 6/2.

B. B. Gauther Co., 22 Washington Blvd., Oshkosh, Wis. CA, 1 story, 98x357 ft. concrete, brick, steel FACTORY addn., OSHKOSH, WIS. Deltox Rug Co., 30 Wisconsin Ave., Oshkosh, Wis. A. R. Ganther, c/o contractor, engr.

Lerner-Linden Constr. Co., 21701 Republic St., Oak Park, Mich. CA Est. **$900,000.** junior high SCHOOL, Chicago Blvd. and Cranston Rd., LIVONIA, MICH. Livonia Public School Dist., Charlotte Cook, secy., Livonia, Mich. Bids May 17. CD 4/20.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Tex., Austin**—BUILDINGS, etc.—BA 7/9—State Bd. Control, State School for Deaf, Capitol Station, new bldgs. and renovation of existing bldgs., $1,750,000. Plans deposit $50 each general and mechanical. Fehr & Granger, 502 E. 5 St., Niggli & Gustafson, 1313-A S. Congress St., archts., Wilson & Cottingham, Brown Bldg., Austin, Walter P. Moore, 2 Pinedale St., Houston and Blum & Guerrero, 1700 Guadalupe St., engrs. Bids June 9 rejected. LB **$1,876,719.** CD 6/16, under LB.

HEAVY CONSTRUCTION—LB & CA

† **Lippert Bros.**, Boone, Iowa. CA **$571,825.** weather station, GRAND RAPIDS, MINN. U. S. Eng., 1217 Post Office and Custom House, St. Paul, Minn. CD 6/17, under LB.

F & R Ryan, Hibbing, Minn. Owner Builds. **$900,000.** SHOPPING CENTER 4 separate units, 10 stores, BLOOMINGTON (P. O. MINNEAPOLIS), MINN. Thorshov & Cerny, Metropolitan Bldg., Minneapolis, Minn., archts.

Ringland Johnson, 202 Cooper Bldg., Des Moines, Iowa, CA, general constr., est. **$500,000.** 5-story 50x107 ft. rein.-con. with brick exterior HOSPITAL addn., DES MOINES, IOWA. Des Moines General Hospital Co., 603 E. 12 St., Des Moines, Iowa. Wetherell & Harrison, Shops Bldg., Des Moines, Iowa, archts.;
Van Dyck Plumbing & Heating Co., 929 6th St., Des Moines, Iowa, CA mechanical; (Des Moines, Iowa);
Conditioned Air Corp., 220 New York St., Des Moines, Iowa, CA air conditioning, ventilating (Des Moines, Iowa);
Furlong & Baker, 615 Center Ave., Des Moines, Iowa, CA electric (Des Moines, Iowa).

▲† **Peter Kiewit Sons Co.**, 1024 Omaha Natl. Bank Bldg., Omaha, Neb., LB **$3.643.338,** airfield paving, grading, jet fuel storage, Eng 25-066-55-91. MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 21. CD 5/25.

▲ † **Foley Bros. Inc.**, New York Bldg., St. Paul, Minn., **Winston Bros. Constr. Co.**, Northwestern Bank Bldg., Minneapolis, Minn., **Donovan Constr. Co.**, 1725 Carroll Ave., St. Paul, Minn., **C. F. Lytle Co.**, 250 Insurance Exchange Bldg., Sioux City, Iowa, and **Missouri Valley Constr. Co.**, Leavenworth, Kan., CA **$4,631,805.** outlet works, Stage IV, control substructures, Oahe Reservoir Proj., near Pierre, Inv. 25-066-55-112. SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 8. CD 6/13, under LB.

▲† **Campbell & Kay**, Box 836, Tyler, Tex. LB **$1,586,861.** est. $750,000-$1,500,000. six 3 story 40x200 ft., concrete, masonry airmen's dormitories, Holloman Air Development Center, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids June 15. CD 5/26.

BUILDINGS—LB & CA

▲ **Koedding Building Co.**, 941 Highmont Ave., Ferguson 21, Mo. CA Est. **$10,000,000.** Grand View SHOPPING CENTER incl. 3 story department store, various 2 and 1 story structures, involving all about 800,000 sq. ft. under roof, drives, parking area on 80 acre site on U. S. No. 66 adjacent to Washington Ave.; CA Est. **$3,000,000.** 300 RESIDENCES in Grand View Subdivision on 8 acre tract adjacent to proposed Grand View Shopping Center adjacent to U. S. 66 and Hy. 140, (Lindbergh Blvd.), FLORISSANT, MO. Northwest Developers, Inc., A. F. Koedding, Jr., 941 Highmont Ave., Ferguson 21, Mo.

▲ **Dickie Constr. Co.**, 317 N. 11 St., St. Louis 1, Mo. CA Est. **$2,500,000.** CENTRAL BLDG. incl. 5 units, 2 level 111x241 ft. upper school; 1 story, 79x254 ft., mezzanine administration and social; 2 levels 67x136 ft., 45x75 ft., 24x62 ft. and 40x75 ft. kitchen and middle school; 2 levels 50x82 ft., 40x83 ft. and 45x66 ft. lower school; 116x270 ft. girls' gymnasium east of Mason and Lasky Rds. between U. S. 40 and Clayton Rds., ST. LOUIS COUNTY, MO. The Principia Schools Bd. Trustees, Frederick E. Morgan, pres., Principia Corp., 5539 Page Blvd., St. Louis 12, Mo. Risley & Gould, 2502 W. Third St., Los Angeles, Calif., archts. CD 11/20/52.

▲ **Parsons Constr. Co.**, 2512 Deer Park Blvd., Omaha, Neb., CA **$1,231,923,** general constr., North Omaha POWER STATION ADDN., 2nd unit, OMAHA, NEB. Omaha Public Power Dist., 17 and Harney Sts., Omaha, Neb. Bids June 2;
General Electric Co., 610 Electric Bldg., Omaha, Neb., CA **$305,420,** substation equipment and switchboard, (Omaha, Neb.).

▲† **Eckert-Fair Constr. Co.**, National City Bldg., Dallas, Tex., LB **$581,812** one or two 3-story concrete frame BARRACKS; LB **$581,812,** appurtenances, utilities, Inv. No. ENG-34-066-55-110, FORT SILL, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids June 15. CD 5/25.

▲ **Coronado Operating Co.**, 79 and Portland Sts., Oklahoma City, Okla. Purchase and Hire. **$1,400,000.** 150,000 sq. ft. SHOPPING CENTER, parking area, OKLAHOMA CITY, OKLA. John Jeffers, 2632 N. W. 28 St., Oklahoma City, Okla. archt.

▲ **Farnsworth & Chambers Co., Inc.**, Box 74, Houston, Tex. CA **$30,000,000** SHOPPING CENTER, in "Sharpstown", BELLAIRE, Tex. Frank W. Sharp, 2202 Rosslyn St., Houston, Tex. CD 3/21.

▲ **Syndicate**, c/o Larry D. Sligar, 8226 Grafton St., Houston, Tex. Own Forces. **$345,000,** 28 DWELLINGS; **$391,500,** 65 frame dwellings; **$365,000,** 56 frame dwellings, Grand total $1,101,500. HOUSTON, TEX. CD 1/26.

▲ **Texala Constr. Co.**, 8120 Stedman St., Houston, Tex. CA **$357,000,** Job 5, 23 DWELLINGS: CA **$362,117,** Job 6, 26 dwellings; CA **$433,220,** Job 7, 35 dwellings, Grand total $1,152,337, HOUSTON, TEX. Ethelyn Corp., c/o Malcolm Mc Culloch, 2111 Jensen Dr., Houston, Tex. CD 7/28/54.

▲ **M & N Constr. Co.**, 8406 Mosley St., Houston, Tex. CA **$358,000,** Proj. 5, 36 DWELLINGS; CA **$358,805,** Proj. 6, 30 dwellings; CA **$405,910,** Proj. 7, 41 dwellings, HOUSTON, TEX. Ethelyn Corp., c/o Malcolm Mc Culloch, 2111 Jensen Dr., Houston, Tex. Grand total $1,122,715. CD 1/26.

▲ **Westinghouse Electric Corp.**, 507 Dallas St., Houston, Tex., CA **$1,442,570,** Item 1, 17,500-KV gasoline turbine POWER PLANT, LUBBOCK, TEX. City, City Hall, Lubbock, Tex. Bids May 17. CD 5/31 under LB.

▲ **Parker Brothers & Co., Inc.**, 5303 Navigation Blvd., Houston, Tex. Own Forces. **$1,006,290,** (D) 35 frame DWELLINGS: (E) 30 frame dwellings; (G) 37 frame dwellings, PASADENA, TEX. CD 11/10/54.

A. L. Burris, Port Lavaca, Tex., Purch and Hire, **$365,000,** 33 DWELLINGS; **$355,000,** 30 dwellings, PORT LAVACA TEX. CD 3/15.

J. W. Bateson Co., Inc., Gibraltar Life Bldg., Dallas, Tex., LB **$63,500,** water sys.; LB **$95,610,** sanitary-storm sewers; LB **$51,115,** plant site area grading, earthwork; LB **$136,000,** road work and paving in plant zone, auto hard paved parking center; LB **$77,175,** plant area lighting sys.; LB **$75,000,** natural gas lines, PLANT UTILITIES, TYLER, TEX. General Electric Co. River Rd., Schenectady, N. Y. Bids June 2. CD 5/25.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Oregon**—BA 9/12—U. S. Eng., Pittock Bldg., Portland, closure dam and removal of cofferdam, The Dalles Dam. Wasco Co. Civeng-35-026-56-1. est. $10,000,000.

HEAVY CONSTRUCTION—LB & CA

▲† **J. W. Bateson**, 400 Gibraltar Life Bldg., Dallas, Tex., LB **$3,572,352** (5 bidders) AMC warehouses and supporting facilities, ENG-55-521, HILL AIR FORCE BASE, UTAH. U, S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 17. CD 5/26.

† **Hoffman Constr. Co.**, 715 S.W. Columbia St., Portland, Ore., CA **$665,800,** est. $643,625, (7 bidders), pumping plant addns., RICHLAND, WASH. Atomic Energy Comn., Hanford Operations Office, Richland, Wash. CD 6/15, under LB.

† **Shaw & Estes**, P. O. Box 2399, Dallas, Tex., LB, **$599,859,** (4 bidders) turbo jet engine test facility Alameda Air Station, NOY 87537, Spec. 46589 ALAMEDA, CALIF. P. Wks. Officer, Twelfth Naval Dist., Room B-106, San Bruno, Calif. Bids June 15. CD 6/2.

Fred J. Early Jr., 22138 S. Vermont Ave., Torrance, Calif., CA, **$639,865.** Sch. V, water treatment plant, EL CENTRO, CALIF. City, City Hall, El Centro, Calif. Bids June 1, awarded June 15. CD 6/20, under LB.

† **M & K Corp.**, 405 Montgomery St., San Francisco, Calif., CA **$691,000.** installation crane rails, NOY 87431, Spec. 45264, SAN FRANCISCO, CALIF. P. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids June 1. CD 5/10.

▲† **Heller Constr. Co., Campbell Constr. Co.**, and **Lawrence Constr. Co.**, 3020 V St., Sacramento, Calif., CA **$6,394,853,** AMC warehouses and facilities, McClellan Air Force Base, SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids June 14. CD 6/16 under LB.

BUILDINGS—LB & CA

▲ **Paulsen Constr.**, 1425 Jefferson St., Salt Lake City, Utah, LB **$1,258,500,** general constr., Southeast HIGH SCHOOL, SALT LAKE CITY, UTAH. Bd. Educ., 440 E. First South St., Salt Lake City, Utah. Bids June 9. CD 3/24.

† **R. T. Earley Co.**, 321 Middle Waterway, Tacoma, Wash., LB, **$767,000,** est. $787,836, (10 bidders) depot maintenance SHOP, Mount Rainier Ordnance Depot, Inv. 55-233, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids June 14. CD 5/26.

▲ **The Rancho Realty & Development Co.**, 1615 Belmont St., Fresno, Calif. Owner Builds. **$5,000,000.** 353 HOMES, FRESNO, CALIF.

▲ **Earl W. Smith Co.**, 1344 San Pablo Ave., El Cerrito, Calif. Owner Builds. **$4,560,000.** 480 HOMES, FRESNO, CALIF.

▲ **Alpine Homes Inc.**, 8660 Wilshire Blvd., Los Angeles, Calif., CA, **$2,164,600.** 183 DWELLINGS Rosalita, Postrana, Manecita, La Mesa and Cartelac Drs. LA MIRADA, CALIF. La Mirada Estates, 8660 Wilshire Blvd., Los Angeles, Calif.

▲ **E. H. Moore & Son**, 693 Mission St., San Francisco, Calif., CA **$2,763,500,** COURT HOUSE, VISALIA, CALIF. Tulare Co., Court House, Visalia, Calif., Bids June 14. CD 6/17 under LB.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Iroquois Constructors, Ltd.** (Foundation Co. of Canada, Ltd., 1220 Bay St., Toronto, Ont., Angus Robertson Ltd., 57 Bloor St., W., Toronto, Ont., Pentagon Constr. Ltd., 1225 Bishop St., Montreal, Que., Rayner-Armstrong Ltd., 3130 Bathurst St., Toronto, Ont., Canadian Comstock Ltd., 206 Laird Dr., Toronto, Ont.,) 1290 Bay St., Toronto, Ont., CA **$21,940,253** (5 bidders) Ontario Sect. of St. Lawrence International Power House at Cornwall. ONTARIO. Ontario Hydro-Electric Power Comn., 620 University Ave., Toronto, Ont. Bids May 10. CD 3/15.

ONTARIO and QUEBEC—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., and Que. Prov. Govt., Quebec City and Ontario Prov. Govt., Ottawa,
Pentagon Constr. Co., Ltd., 1225 Bishop St., Montreal, Que., LB **$834,549** (12 bidders) central portion of interprovincial bridge across Ottawa River at Allumette Island near Pembroke. Bids June 15. CD 5/27.

Dominion Bridge Co. Ltd., 1139 Shaw St., Toronto, Ont., LB, **$770,685,** (1 bidder), steel arches and structural steel for women's bldg., Canadian National Exhibition, TORONTO, ONT. City, City Hall, Toronto, Ont. CD 5/2.

BUILDINGS—LB & CA

▲ **Bird Constr. Co. Ltd.**, Sargent and Erin Sts., Winnipeg, Man., CA **$3,136,657,** Deer Lodge Veterans HOSPITAL St. James, near here, WINNIPEG, MAN. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids May 18. CD 5/25, under LB.

Foundation Maritimes Ltd., 135 Lower Water St., Halifax, N. S., CA, **$895,368** (13 bidders) two blocks, one 3 story 42x210 ft., second part, 2 story mostly 1 story, 117x143 ft., rein.-con., brick, officers QUARTERS, Naval Base, DARTMOUTH, N. S. Defence Constr. Ltd. 56 Lyon St., Ottawa, Ont. Burnford, Bolton & Chadwick 1980 Sherbrooke St. W., Montreal, Que., archts. Awarded June 13. CD 12/15/54.

▲ **Ross-Meagher Ltd.**, Echo Dr., Ottawa, Ont., CA **$1,038.418.** POLICE bldg., Waller St. and Besserer Sts., OTTAWA, ONT. City, City Hall, Ottawa, ONt. CD 6/7, under LB.

Anglin-Norcross Ontario Ltd., 224 Davenport Rd., Toronto, Ont., CA, **$800,000.** 1 story 300x400 ft. steel frame brick FACTORY, Islington Ave. and Hy. 41, Cloverleaf, TORONTO, ONT. Radio Valve Co. Ltd., 190 Dufferin St. Toronto, Ont. Bids June 2, awarded June 15.

▲ **Belle Constr.**, Alma (Lac St. Jean), Que., CA est. **$1,600.000.** HOME FOR AGED (Foyer St. Jerome), METAHATCHOWAN, QUE., LaCongregation des Filles de Ste. Marie de la Presentation, Metahatchowan, Que. R. J. Johansen, 205 120 Ave., Shawnigan Falls, Que., archt.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Richardson Constr. Co. and Valorys Engrg. Co.**, 645 N.W. 7th Ave., Fort Lauderdale, Fla., CA Est. **$50,000,000** 15,000 HOUSING units, PERU. Govt. of Peru, Lima, Peru. CD 9/11/45.

UNIT PRICES

Barnhart Island Power Plant, U. S. Side

All but 13 of the 220 unit prices bid for the U.S. half of Barnhart Island power plant, St. Lawrence power project, were adjusted to reach the negotiated contract price, $35.8-million. Unit prices adding to this total are listed below as contract prices of the successful bidder, a combine of B. Perini & Sons, Inc., Walsh Construction Co., Morrison-Knudsen Co., Inc., Peter Kiewit Sons' Co. and Utah Construction Co. Also listed are this same combine's bid prices which added up to its second-low bid of $37.4-million (ENR May 19, p. 27).

Work includes a 1,565 ft long, 160-ft high dam, a semi-outdoor type 940,000-kw plant, and a concrete forebay training wall and earthfill dike. Besides 16 power unit blocks housing 60,000-kva generators there are three ice sluice blocks and a building over the shore ice sluices for erection bay, control room and shops. •

2C	B. Perini & Sons, Inc., Walsh Const. Co., Morrison-Knudsen Co., Inc., Peter Kiewit Sons' Co., Utah Const. Co. (negotiated)	$35,849,000[a,b]
2	Original bid	37,395,937[b]

Bids: 4–15–55		Quan-	Unit Prices	
Items	Unit	tity	Bid	Contract
Care of water	ls	....	$500,000	$480,000
Rem U. S. half coffrdm cl	ls	....	150,000	144,450
Excavation:				
Common, for				
power plant & trg walls	cy	1,500,000	0.85	0.82
switchyd abv el 204.5	cy	350,000	0.85	0.82
below el 204.5	cy	56,000	1.50	1.45
misc structs, trenches	cy	5,000	4.00	3.86
power & contr tunnels	cy	26,500	1.50	1.45
access roads & embank	cy	200,000	0.75	0.72
Stripping, borrow areas	cy	50,000	0.75	0.72
Common, borrow areas	cy	400,000	0.75	0.72
Rock, p plt & trng walls	cy	140,000	3.00	2.90
Final fndn cleanup	sy	49,000	2.00	1.93
Drilling line holes	lf	48,000	0.60	0.58
Drilling & broaching	sf	48,000	2.25	2.17
Rock, hand methods, pow plant & training walls	cy	55,000	12.50	12.06
Grouting:				
Holes in concrete	lf	6,400	2.75	2.65
Drill & grt holes, overb	lf	25,000	3.50	3.38
Core drill AX holes 0–75'	lf	7,500	3.50	3.38
75-200'	lf	5,500	4.00	3.86
Drill grout holes:				
w/percussn drils 0–25'	lf	18,000	0.75	0.72
w/rotary drils 0–75'	lf	55,000	2.50	2.41
75–150'	lf	25,000	2.50	2.41
Met P & fit, grt & drainge, f & p	lb	25,000	0.50	0.48
Drill drainage holes	lf	10,000	5.00	4.83
Split-sewer-P drains	lf	11,400	6.50	6.27
Press grt fndns	cf	75,000	2.50	2.41
Connections to grt holes	ea	5,000	12.00	11.58
Dike, embankments:				
Earthfill	cy	1,300,000	0.15	0.14
Specl compactn earthfil	cy	10,000	2.00	1.93
Drainage layer und emb	cy	61,000	3.00	2.90
Filt layr btwn rock, erth	cy	8,000	3.00	2.90
Rock fill	cy	30,000	1.50	1.45
Cr rock or grav blanket	cy	32,000	4.50	4.34
Riprap	cy	85,500	1.50	1.45
Embankments, access rd	cy	95,000	0.40	0.39
Backfill	cy	61,800	0.60	0.58
Compacted fill	cy	151,000	1.00	0.97
Screened gravel	cy	8,400	4.50	4.34
Road work:				
Bank run grav fndn crse	cy	50,000	3.00	2.90
Filled stone base course	cy	7,800	7.00	6.76
Bit mac base course	t	9,400	6.50	6.27
matl pentr method	gal	105,000	0.16	0.15
Plant mix asphalt conc	t	10,000	10.00	9.65
Hwy grd rail 2-wire, f&e	lf	20,000	2.25	2.17
Seeded topsoil	ac	35	1,000	965.00
Seeding	ac	20	350.00	337.75
RCCP 36", f&i	lf	100	25.00	24.13
Chain link fencing, f&i	lf	3,000	5.50	5.13
RCCP 24", f&i	lf	720	15.00	14.50
Stabilized shoulders	cy	700	7.00	6.76
Concrete work:				
Portland cement	bbl	987,000	4.50	4.34
Alternate portland cmt	bbl	790,000	4.50	4.34
natural cement	bbl	197,000	4.30	4.15
Reinforcing bars	lb	37,460,000	0.09	0.09
Mass concrete	cy	216,000	16.50	15.79
Concrete in:				
intake structure	cy	220,000	17.00	16.30
ice sluices	cy	80,700	16.00	15.50
pow plt sub, 1st stage	cy	189,100	22.00	21.23
2nd stage	cy	67,000	27.00	26.08
superstructure	cy	5,000	50.00	48.27
training walls	cy	92,000	14.00	13.51
power & control tunnels	cy	7,100	52.00	50.18
Concrete in switchyard	cy	5,800	28.00	27.02
misc structures	cy	2,000	30.00	28.95
blockouts	cy	850	45.00	43.40
cover slbs ov watr prf	cy	900	70.00	67.55
equip fndn pads	cy	700	50.00	48.25
bonded floor finish	sf	16,000	0.60	0.58
concrete wall base	lf	1,500	1.00	0.97
Asph seals, contractnjt	cf	500	8.00	7.72
Premoulded jt filler	sf	9,300	0.40	0.39
Expansion joint sealer	lb	11,400	0.50	0.48
Rubber water stops	lf	16,600	3.00	2.90
Metal water stops	lb	54,000	0.25	0.24
Asph coatgs, contr jts	sf	9,500	0.30	0.29
Membrane waterproofing	sf	100,700	0.30	0.29
Dampproofing	sf	157,000	0.10	0.10
Structural steel:				
F&e, office & erectn bay	lb	1,420,000	0.16	0.15
ice sluices	lb	400,000	0.16	0.15
mech, & elec eq gal	lb	680,000	0.16	0.15
rails & accessories	lb	1,170,000	0.16	0.15
Swyd & transm towrs, er	lb	1,200,000	0.08	0.07
Draft tube pier noses, i	lb	1,030,000	0.10	0.10
Misc steel & iron	lb	600,000	0.60	0.58
Galv misc steel	lb	62,000	0.70	0.68
Arch & struct finish:				
Ceramic glazed face brk	sf	30,800	2.50	2.41
Conc block wall 8"	sf	10,700	1.25	1.20
12"	sf	3,100	1.25	1.20
Cinder block work 12"	sf	350	1.10	1.06
8"	sf	38,600	0.50	0.48
6"	sf	7,200	0.85	0.82
4"	sf	5,300	0.85	0.82
Glazed facg tile work:				
2" units	sf	4,000	2.00	1.93
4" units	sf	1,100	2.00	1.93
6" units	sf	2,800	2.50	2.41
8" units	sf	1,300	2.75	2.65
Struct clay tile work:				
2" units	sf	18,600	0.70	0.68
4" units	sf	2,300	0.70	0.68
6" units	sf	15,200	0.70	0.68
8" units	sf	4,700	0.90	0.87
Marble work	sf	8,850	6.00	5.80
Ceramic glazed wall tile	sf	27,500	2.00	1.93
Plaster, two-coat	sy	1,300	2.10	2.03
three coat	sy	900	2.60	2.50
cement	sy	2,400	3.65	3.52
Tile floor & base:				
ceramic mosaic	sf	5,100	1.40	1.35
quarry	sf	101,000	1.30	1.25
rubber	sf	14,900	0.70	0.67
Vinyl asb tile floorg	sf	1,500	0.50	0.48
Wood block flooring	sf	2,100	2.00	1.95
Terrazzo work	sf	13,350	1.80	1.74
Furring & lathing	sy	900	3.70	3.57
Acoustical tile	sf	21,000	0.75	0.72
Flexwood wall finish	sf	2,000	1.90	1.83
Doors, interior, alum	sf	850	30.00	29.00
hollow metal	sf	4,200	5.75	5.55
fire & vault	ls	....	1,700	1,640
alum roll-up	ls	....	11,000	10,600
vert-lft single lf	ls	....	35,000	33,775
five leaf	ls	....	135,000	130,000
Alum window & entrances	ls	....	65,000	62,725
Insulating glass	sf	8,600	4.75	4.58
Plate glass, heat absrb	sf	3,000	2.50	2.41
Flat drawn glass	sf	300	0.90	0.87
Polished plate glass	sf	400	1.75	1.69
Builders hardware	ls	....	18,000	18,000
Wall flashg & sheet met	sf	2,000	1.25	1.20
Met toilet & showr encl	ls	....	9,000	8,600
Toilet & showr rm acces	ls	....	1,900	1,800
Met lockers & key cabin	ls	....	3,500	3,350
Steel roof decking	sf	59,000	0.40	0.37
Built-up roofg, vapor barrier, & insulation	sf	59,000	0.60	0.00
Foamglas insulation	sf	16,800	0.30	0.58
Insulated alum panels	sf	66,800	2.00	1.29
Alum, orn & misc	lb	10,000	3.25	3.93
spandrel & col trm	ls	....	57,000	55,010
Movable steel partition	sf	1,300	2.80	2.70
Equipment, install:				
Towers for intake gates	lb	3,600,000	0.06	0.05
Bulkhd gate frames & gds guides, stop-log gds	lb	2,300,000	0.04	0.04
Fixed-wheel gates	lb	6,720,000	0.03	0.03
Bulkhead gates	lb	240,000	0.05	0.05
Trash racks, stop logs	lb	2,300,000	0.03	0.03
Intake gate hoists	lb	1,000,000	0.07	0.06
Cranes	lb	1,400,000	0.08	0.08
Generator hatch covers	lb	500,000	0.07	0.07
Intake gate hatch cover	lb	288,000	0.07	0.06
Motor-driven air compres	lb	62,400	0.25	0.24
After coolers	lb	3,000	0.45	0.43
Air receivers	lb	34,400	0.10	0.10
Pump units, i & test:				
motor-dr oil, gear-typ	lb	9,200	0.25	0.24
water, centrif	lb	14,300	0.30	0.29
Sump pumps	lb	50,600	0.30	0.28
Sewage injectors	ls	....	1,000	965.00
CO_2 fire ext syst	ls	....	50,000	48,250
Oil purif & paper dryg ovens, 2, & centrifuge	ls	....	4,000	3,860
Chlor & water filt eq	ls	....	1,700	1,640
Machine tools	ls	....	4,000	3,860
Water level transmittrs	ls	....	600.00	580.00
Centrifugal fans	lb	41,000	0.40	0.39
Propeller-type fans	lb	3,000	0.80	0.77
Grilles, reg, diffusers	lb	23,200	0.70	0.68
Louvers & dampers	sf	1,600	1.50	1.45
Filters	lb	4,000	0.40	0.39
Electric heaters	lb	14,500	0.50	0.48
Air conditiong cabinets	ea	2	2,500	2,400
Air cond units self-cont	ls	....	1,500	1,450
Refrigeratn compressrs	ea	2	1,200	1,150
Controls	ea	70	60.00	58.00
Fire hose cabinets, eq	ea	25	75.00	72.00
Hose racks	ea	21	50.00	48.00
Portable fire exting	ea	50	25.00	24.00
Trans transf car, assemb	lb	10,000	0.10	0.09
Oil storage tanks		37,900	0.09	0.09
undergrnd	lb	34,600	0.03	0.03
Hydr turbines, i&test 16	ls	....	750,000	720,000
Governors, i & test 16	ls	....	140,000	135,000
Spec valves & strainers	lb	116,300	0.11	0.10
Equipment, furnish & install:				
Sheet metal	sf	114,000	1.75	1.68
Dust insulation, f&apply	sf	58,000	0.50	0.48
Hose & hydr houses, eq	ls	....	9,000	8,700
Stl & WIP, fit, vlv				
2"φ & less	lb	71,000	1.15	1.10
2½"–6"φ	lb	136,000	0.65	0.63
Met P fit, vlv 8"φ&over	lb	255,500	0.50	0.48
CIP & fittings	lb	607,000	0.30	0.29
Embedded CIsoil P, fitgs	lb	323,700	0.30	0.29
Brass P & fittings	lb	10,000	1.40	1.35
Vitrified clay pipe	lb	449,800	0.05	0.05
Pipe hangers, supports	lb	15,000	0.65	0.62
Fire hydrants	ea	8	375.00	360.00
Water closets	ea	27	130.00	125.00
Lavatories	ea	25	110.00	106.00
Urinals	ea	13	120.00	115.00
Showers	ea	5	140.00	135.00
Service sinks	ea	5	140.00	135.00
Drinkg water fountains	ea	6	110.00	106.00
Electric kitchens	ea	4	900.00	850.00
Elec drinkg water coolrs	ea	4	350.00	335.00
Storage water heaters	ea	5	200.00	190.00
Name plates	ea	2,000	0.75	0.72
Catch basins, f & const	ea	33	250.00	240.00
Manholes, f& construct	ea	3	500.00	480.00
Septic tank	ls	....	250.00	240.00
Unload, store, move electrical equipment	t	14,000	12.00	11.58
	t	2,000	10.00	9.65
Grounding system size A	lb	1,000	1.00	0.96
A	lb	3,000	1.00	0.97
B	lb	50,000	0.80	0.77
B	lb	30,000	0.80	0.77
Met cond, box, fitg size A	lb	240,000	0.80	0.77
A	lb	3,000	0.80	0.77
B	lb	80,000	0.60	0.57
B	lb	275,000	0.60	0.58
C	lb	90,000	0.40	0.38
C	lb	55,000	0.40	0.39
Non-met cond, fit	lf	1,000	0.60	0.57
	lf	300	0.60	0.58
Special conduit boxes	lb	1,000	0.50	0.48
	lb	200	1.00	0.97
Painting	ls	....	65,000	62,725
Perf, labor, mat bond	ls	....	258.655	250,000[a]

[a] Performance bond not included in contract price

[b] Alternate including natural cement. Base totals using portland cement only & incl performance bond: original bid $37,435,337, negotiated $36,136,430

Completion time and liquidated damages:

- Erection bay & control room, erect cranes to permit electrical contractor's use by 6–1–57; $2,000/calendar day
- Install turbines & governors, 2nd stage concrete below el 195; turbines 10–1–57 to 8–15–59; $2,000/day
- Compl removal cofferdam C1 & work to permit raising pool to el 235 by 7–1–58; $5,000/day
- All work 12–30–59, $1,000/day, reduce to $200 if minor work; no charge if compl except for rem contr plant

BUSINESS AND FINANCE

How Much Traffic Can Big U. S. Cities Take?

Conference calls for better balance between mass transit and use of cars in business sections of big U. S. cities

J. P. Chamberlain

Associate Editor

A small group of experts met in Chicago last week and tried to discern the future pattern of U. S. metropolitan areas. They were transit executives, city planners, and public officials talking for the information of an interested group of newspapermen from many parts of the country.

In three days of discussion, the group found it did not entirely agree on what it saw in the crystal ball. But what the experts did agree on has a lot of meaning for the engineers and contractors who will design and build these cities of the future.

The subject of the meeting, held under the auspices of the Public Administration Clearing House (a non-profit group specializing in information on local-government activities), was "The Nation's Urban Transit Crisis."

Naturally, the transit executives in the group were particularly concerned with financial difficulties of transit lines and corresponding increase in use of private automobiles. But on this everyone agreed: If the central areas of U. S. cities are to avoid decay, they must develop a better balance between rapid transit and the use of automobiles downtown. Furthermore, the group agreed that supporters of better highways should devote some attention to educating Americans in the proper use of cars downtown.

• **Through traffic**—The experts were unanimous in recommending that highway engineers plan to steer away from downtown areas the traffic that is just passing through. Traffic engineer George Barton of Northwestern University estimated, for instance, that in medium-sized cities of from 250,000 to 500,000 population, 35% to 50% of traffic fall in this category. In this connection, they criticized construction of radial highways that funnel private cars into the center of town.

According to several speakers, downtown merchants have badly deceived themselves for many years in their attempts to maintain curbside parking and to encourage people to drive downtown. Said William G. Austin, manager of the Merchants Association of Kansas City: "The parker at the curb is not a shopper. He is usually a worker or a salesman."

• **Parking**—Instead, the urban experts agreed, cities will have to plan for parking areas at the fringe of shopping districts, within easy walking distance of stores. Along with this would go belt highways around business sections, taking traffic off the central streets. Designed for the all-day parker would be "park-and-ride" areas further out on the edges of the city, served quickly by transit facilities. To cure the headache caused by truck delivery at street curbs, Barton suggested that some form of off-street cargo distribution system would have to be developed.

The group praised Chicago's Congress Street Expressway, now under construction, as a model for future study by highway engineers. This expressway provides space for two rapid-transit lanes, which in this case are rail cars but which could in other projects be designed for buses. In this way, everyone at the meeting agreed, the actual passenger-carrying capacity of the expressway can be greatly increased, since a single rail car or bus can carry the equivalent of the usual capacity of many passenger cars.

• **Turning drivers into riders**—Can the transit companies help solve the highway problem by turning drivers into riders? Top executives of two big transit systems told the group they believed their own experience showed it could be done.

Donald Hyde, general manager of Cleveland's municipally owned transit system and president of the American Transit Assn., emphasized the importance of speed, achieved if possible along exclusive rights of way. Just how this was to be financed by private transit companies, nobody at the Chicago conference knew, though several commented on what they called the relative ease of financing highways with federal aid and state gas taxes, compared with the problem of getting private and even public financing for new transit systems.

E. L. Tennyson, Traction Commissioner of Youngstown, Ohio, suggested that city governments do the financing by selling tax-exempt municipal bonds, take over transit systems and rent them to operating companies.

John Baine, President of the St. Louis Public Service Co., said that about 20% to 25% of the people who ride his company's express buses used to drive cars.

In addition, Baine argued that provision of bus loading facilities along existing and future expressways could do a lot to help relieve highway congestion. He told the conference that the Missouri Highway Department has agreed with his company's argument that it is proper to use state and federal highway money for this purpose. But he pointed out such a new idea would have to be worked out on a state-by-state and sometimes city-by-city basis.

Canada's Boom Breaks All Records

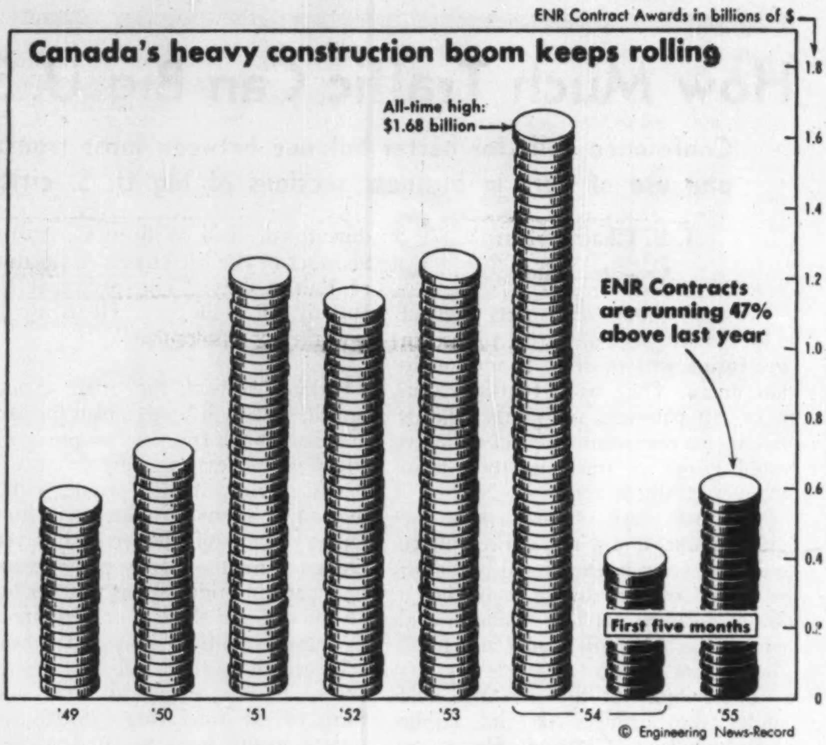
Heavy construction contracts are breaking all records in Canada. Volume for the first five months of this year zoomed 47% above 1954 to an all-time high of $642 million (chart, page 72). This is 16% above the previous high in dollar volume set in the first five months of 1952.

Leading this upsurge in Canadian contracts is private mass housing, which accounts for $237 million of the 1955 total—a gain of 27% over last year. But the biggest percentage gain over last year (170%) is in commercial building, which totals a record $129 million. Though industrial building is up 44%, dollar totals are running well below the high levels of the 1951-1953 period.

Public buildings other than residential are up 71% over a year ago, with awards totaling $77 million for the first five months. Highway volume is 28% above a year ago to a total of $32.4 million in awards. This increased rate of highway contracts in 1955 is expected to continue through the rest of the year.

• **Bullish news**—ENR's backlog indicates that this boom will continue. During the first five months of this year, the backlog rose 5.5% to $11.6

(*Continued on page 72*)



Canada's heavy construction boom keeps rolling

© Engineering News-Record

billion, only slightly behind the record total of $11.8 billion in July 1953. After declining in the second half of 1953 the backlog remained relatively stable in 1954. Its rise this year is bullish news for construction in Canada.

All of the gain in the backlog this year has been in private work.

Commercial building and private mass housing projects have risen from a combined total of $1.9 billion at the start of 1955 to $2.1 billion at the end of May, a 13% rise. Private unclassified construction (mainly pipelines) has increased 9% to $1.8 billion, though it is 3% below this time a year ago.

The backlog for industrial building continues to rise this year, though more slowly than last year. It is up 2.5% since the turn of the year to $1.8 billion. Compared with this time a year ago, the industrial backlog is up 18%. It is now within 7% of the record total reached in April 1953.

Business Briefs . . .

• **GM plans**—Most of that $500-million program of capital expenditures announced by General Motors last week will go for new machine tools and other mechanical equipment, a study of the detailed program indicates. However, construction of about 6,300,000 sq ft of additional floor space is planned—though no specific projects have been announced.

• **Bait for business**—Hoping to attract new industry through the device of low-cost plants readily available, a new Toledo, Ohio, company has awarded contracts for a new $100,000 factory, of brick, steel and glass, providing 18,000 sq ft of floor space. Backed by local businessmen, the new company is Expressway Industrial Developers. It plans to sell or lease the new plants as built (selling leases if necessary, to investment concerns) and use cash realized to build more new plants.

• **Thruway business good**—Closing its first year of operation (the road is not fully open) the New York State Thruway Authority announced that 8,700,000 vehicle trips had been made since the first toll section opened. Revenues from tolls: $7.1 million.

• **Experts for shoppers**—The New York City Housing Authority has engaged a commercial management firm—Charles F. Noyes Co. to advise it on design and location of shopping facilities for its two new projects: Benjamin Franklin and Robert A. Taft Houses.

• **Connecticut Expressway**—Connecticut plans to sell another $1 million of bonds within about two months to finance its 129-mi cross-state toll road. Like the first $1-million bond issue in early 1954 the new bonds will be backed by toll revenues and also by proceeds of the first four cents of Connecticut's six-cent gas tax.

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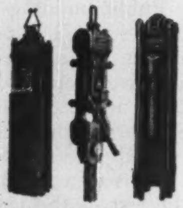

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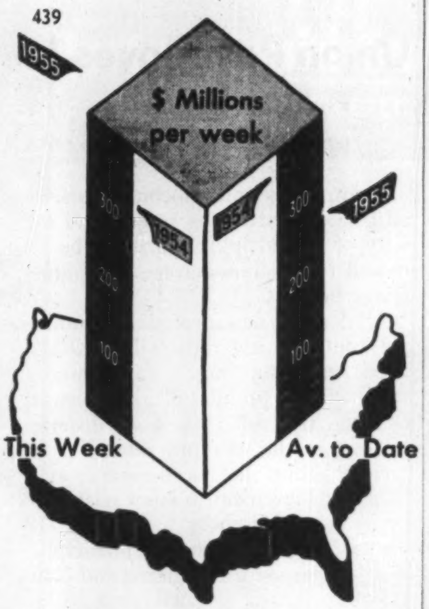
Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 26 wks 1955	Cumulative 26 wks 1954	% chge
Federal	$51.3	$893.4	$586.5	+52
State and Municipal ...	110.1	2,625.2	2,337.0	+12
Total public....	161.4	3,518.6	2,923.5	+20
Total private...	277.7	5,905.5	3,904.0	+51
U. S. Total....	$439.1	$9,424.1	$6,827.5	+38

Contracts by type of work

	This Week	Cumulative 26 wks 1955	Cumulative 26 wks 1954	% chge
Waterworks	$6.3	$128.7	$115.9	+11
Sewerage	8.8	201.0	193.9	+4
Bridges	4.9	231.5	194.3	+19
Highways	54.7	1,063.2	859.1	+24
Earthwork, Waterways ...	8.8	276.0	144.8	+91
Buildings:				
Public, excl. hsg.	41.2	839.6	868.7	−3
Housg., public.	4.4	138.9	113.2	+23
Housg., private	126.7	3,405.6	2,126.5	+60
Commercial ..	100.9	894.4	638.0	+40
Industrial ...	45.0	1,254.5	949.4	+32
Unclassified	37.4	990.7	623.7	+59
Total	$439.1	$9,424.1	$6,827.5	+38

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

(millions of dollars)

	Week of June 23 1955	Cumulative 25 wks 1955	Cumulative 25 wks % chge '54-'55
Corporate securities	$75.3	$1,691.3	+11
State and municipal:			
All except housing.....	110.9	2,078.5	−31
Housing	...	46.2	+8
Federal loans	2.0	54.7	−14
Federal aid	...	95.0	+73
Total non-federal	$188.2	$3,965.7	−16
Federal appropriations:			
In U. S.............	...	59.2	+6
Outside U. S.........	...	...	−100
Total new capital........	$188.2	$4,024.9	−16

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction Cost ...	6/23	659.58	317.06	138.27
	6/2†	655.96	315.32	137.51
Building Cost	6/23	467.14	252.52	132.79
	6/2†	464.82	251.27	132.13
Volume	May	731	297	211
	Apr.	609	248	176

† Official monthly index for June

This announcement appears only as a matter of record.

NEW ISSUE

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Due June 1, 1962

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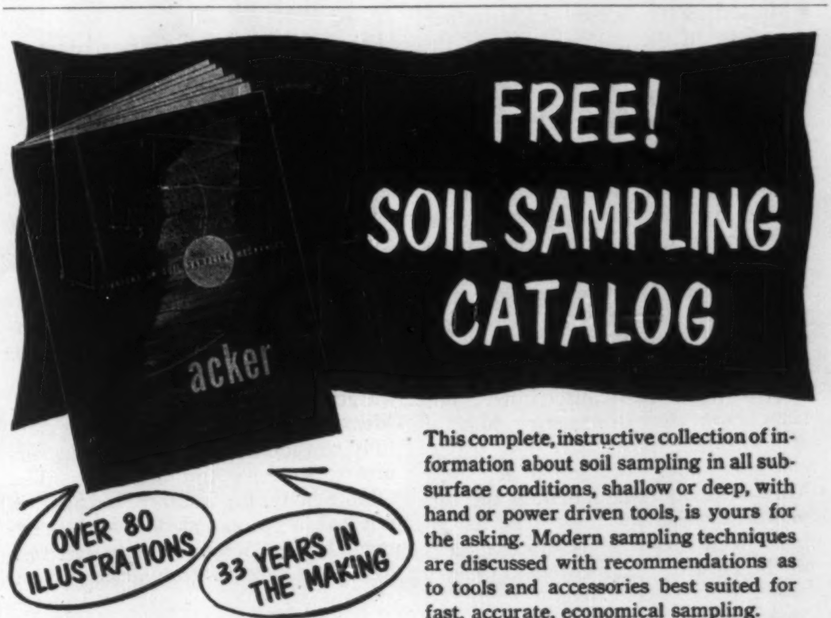
The undersigned have also placed privately, in association with Foley Brothers, Inc., Pleasantville, N. Y., constructors and engineers, $2,300,000 principal amount of 5% Subordinated Debentures due December 31, 1962.

Kuhn, Loeb & Co.

June 21, 1955



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The Pinch of Wages

Some contractors foresee precarious situation

The current trend of wage increases, bolstered now by recent gains in the field of guaranteed wages, has many contractors wondering how long and how successfully the construction industry can keep up its commitments to labor.

Last week, contractors in Massachusetts felt that even a slight drop in business may create a precarious situation. Sharpest pinch is in the area of public works. While private contracts are often placed on a cost-plus basis, affording some protection against rising labor costs and delays in construction, government contracts still leave many contractors out on a limb.

"There is absolutely no protection," observed one prominent contractor, "for the general contractor on government jobs against contingencies arising after the contract is signed." Some are reported to be losing $20,000 to $25,000 on a $1,000,000 project because of rising costs.

• Massachusetts wages – Illustrating one phase of the pincer movement in Massachusetts, are these wage developments:

Boston roofers got a 15-cent increase to $2.88 plus 10 cents for health and welfare. Marble setters won a 16.5-cent boost to $3.16½ now with another 8½ cents Jan. 1, under a two-year contract. Tile setters were upped 26½ cents to $3.25 on a year-and-a-half contract. Ironworkers signed a two-year contract for 15 cents each year, raising the rate to $3.40 on July 1.

Strikes in Massachusetts have not been numerous. Contractors, hopeful of continuing prosperity, have generally gone along with union demands. Most militant trade has been the carpenters, whose rates are reported to have been below general wage scales in the industry. Carpenters in Quincy asking for a 13-cent hike, were still on strike last week.

• Other developments – Elsewhere, carpenters have shown similar determination. Those in Rochester, on strike since May 9, have voted down a proposal to arbitrate and stand on their demand for 25 cents. Employers have offered 15 cents. Meanwhile, construction jobs in a five-county area are stalled, idling 9,000 workers. Settlements in other Rochester trades have averaged 11 cents and carpenters in 11 upper New York cities have been signing up for increases ranging from 7½ to 12 cents.

A 15-day strike by carpenters in Omaha, Neb., has ended under a one-year contract, granting an immediate 13-cent increase to $2.75½, with 2½ cents more Oct. 1 and another 5 cents Jan. 1.

• More boosts–Painters in Spokane, Wash., have ended a one-week strike after winning a 20-cent package under a one-year contract. In addition to a 12½-cent increase, they got a 7½-cent contribution to a medical and hospitalization program.

An eight-day strike by operating engineers in Buffalo, N. Y., ended in a one-year contract, granting an 8-cent increase. Steamfitters in the same area, after a strike vote, won a pension plan for the first time–it calls for a 7½-cent contribution now plus another 2½ cents Dec. 1.

Meanwhile, plumbers and steamfitters in Wilmington, Del., went on strike after turning down a two-year contract offering a 10-cent boost each year.

Unemployment Compensation And the Guaranteed Wage

So far, the supplementary unemployment benefit plans which the automobile workers won in the Ford and General Motors plants have not set off any widespread legislative activity to qualify the plans under state laws.

Although preliminary appraisals indicate that employes receiving company benefits would lose all or some of their state benefits in many areas, the general tendency is to move slowly. Meanwhile, the problem is being carefully considered by local labor departments, agencies and attorneys. The Ohio Senate, for instance, already has rejected a proposed GAW amendment but has referred the matter to a legislative interim committee for analysis.

The holding of special legislative sessions to consider such amendments does not appear likely. This is partly due to the fact that the GAW plans are not effective immediately and have set June 1, 1957 as the ultimate deadline for state approval. In some instances, the plans have not yet won the respect of lawmakers. In Indiana they were recently attacked as "socialistic."

Union Pay Moves In

Philadelphia changes its practice on public works

Contractors and subcontractors on all future construction projects for the City of Philadelphia, Pa., will be required to pay union wages, including fringe benefits.

Under the new procedure, municipal contracts not only will spell out the "prevailing wage" requirements, but will also prohibit work stoppages that might result from wage disputes relating to the new provisions.

The action has been hailed as a "major achievement in labor relations" by Norman Blumberg, manager of the Central Labor Union of Philadelphia and secretary of the Building and Construction Trades Council. And M. E. Rotman, Public Property Commissioner, claims that Philadelphia is the first city in the country to include such provisions in its contracts.

• Wages and working conditions— Specifically, city contracts will provide that "workmen shall be paid not less than the prevailing hourly rate of wages established by the customary and traditional collective bargaining groups for the respective trades or crafts."

Another provision will require that "no general working conditions, including those pertaining to safety, sanitation, health, welfare benefits, pensions, hours of work, overtime and holiday pay and similar working conditions shall be regarded as conducive to efficient performance except those conditions for the performance of similar work in the City of Philadelphia."

"These provisions," Rotman says, "will assure that in the completion of the extensive capital improvement program which the city has planned, only competent and properly skilled and experienced workmen will be employed." He adds that this innovation will prevent contractors "from hiring cheap, unskilled labor, thereby enabling them to underbid others which employ only skilled workmen."

• Arbitration–Disputes which arise in connection with the new provisions will be arbitrated. If a pertinent labor-management contract contains no arbitration provision, the arbitrator will be the Board of Labor Standards, whose decision will be final. Work

(*Continued on page 76*)

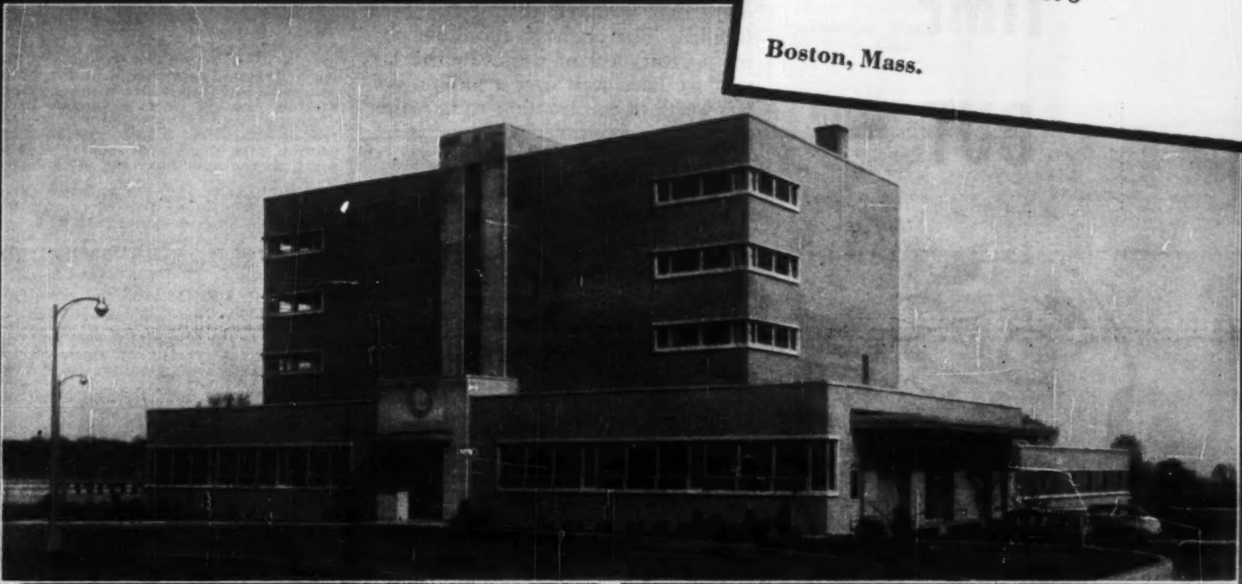
WILMINGTON, DEL.

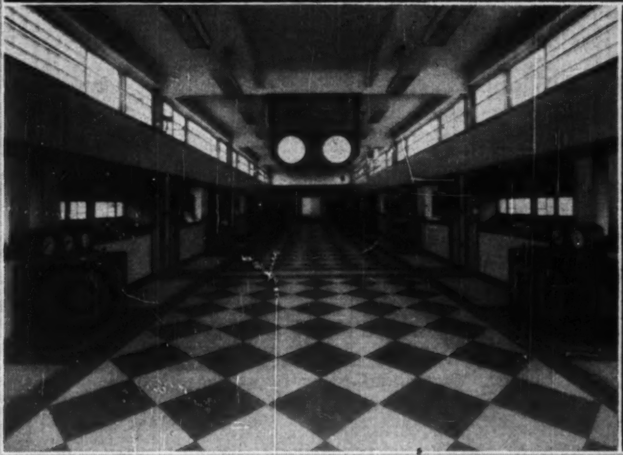
Porter Rapid Sand Filter Plant

(COMPLETED IN 1953)

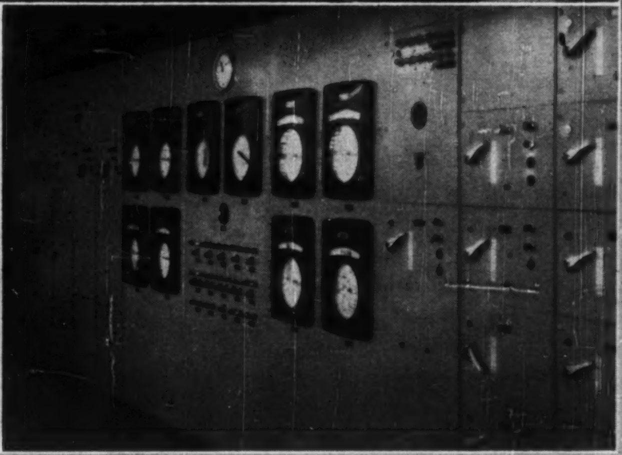
METCALF & EDDY
Engineers

Boston, Mass.





View of the filter gallery showing Builders Filter Operating Tables with Loss-of-Head and Rate-of-Flow Gauges.



Main Operating Panel showing Builders Chronoflo Receivers for metering principal in-plant flows.

Residents of the City of Wilmington can point with pride to this 16 to 24 million gallon per day filter plant. The trim modern lines of its exterior and the orderliness of its galleries are indicative of the plant's high functional efficiency. Design and engineering were carried out by Metcalf & Eddy in cooperation with W. Compton Wills, Manager and Chief Engineer of the Wilmington Water Department.

The plant includes Builders Meters and Controls, installed by the mechanical contractors, Riggs, Distler & Co., Inc. of Philadelphia, sub-contractors to Baton Construction Company — of vital importance in maintaining efficient plant operation the year 'round. For complete information on Builders Water Works Equipment installed in the Porter Rapid Sand Filter Plant, write Builders-Providence, Inc., Providence, Rhode Island.

BUILDERS-PROVIDENCE

DIVISION OF B-I-F INDUSTRIES, INC.

BUILDERS IRON FOUNDRY • PROPORTIONEERS, INC. • OMEGA MACHINE CO.

B-I-F METERS FEEDERS CONTROLS

TAKE

TIME

OUT

Cancer strikes 1 in every 4 Americans. It strikes with vicious swiftness. Too often it is discovered — too late.

To protect yourself and your family, have a thorough medical examination every single year without fail. Six months after such an examination, every woman over 35 should return for a pelvic checkup. Every man over 45 should have a chest X-ray twice each year. *Many cancers can be conquered if caught in time!*

STRIKE BACK AT CANCER... MAN'S CRUELEST ENEMY

Give to AMERICAN CANCER SOCIETY

stoppages, strikes and lockouts are banned during the arbitration period.

Referring to the new provisions, Rotman said that "we, our attorney, the city solicitor, and the representatives of the city have been negotiating for this for almost a year. We are more than gratified that it has been fulfilled. This ought to afford our people a great deal of work. In the last year we have seen over a million dollars worth of construction go to people who are irresponsible."

Engineers and Scientists Clash Again With AFL

Last week another dispute stemming from the jurisdictional strife between AFL's operating engineers and Engineers and Scientists of America came to a head in San Francisco—this time before the NLRB regional director. The result was a settlement agreement reached in a secondary boycott action initiated by a subcontractor.

The dispute had its origin in the northern California operating engineers-AGC contract which covers field engineers (ENR June 23, p. 80). Parish, Harms and Ball, a joint venture constructing a Travis Air Force Base project, was operating under the agreement. It engaged as a subcontractor the Marysville, Calif., engineering firm of St. Maurice, Helmkamp and Musser, which has a contract with Engineers and Scientists of California, an ESA affiliate.

In May, the operating engineers briefly picketed the project in an attempt to force the general contractor to require the subcontractor to comply with the operating engineers' contract. The St. Maurice firm then filed a secondary boycott charge.

Last week a settlement agreement was reached under which the union undertakes to refrain from picketing St. Maurice projects in the future as a means of enforcing compliance with the AGC agreement. The NLRB regional office had taken the position that the subcontractor's use of non-operating engineers in violation of the joint ventures contract was no defense in a secondary boycott action. But in the settlement agreement, the operating engineers specified they didn't concede a secondary boycott violation.

Meanwhile, the St. Maurice firm has filed another charge against the operating engineers with the NLRB. It now claims a violation of Sec. 8 (b) (2) of the Taft-Hartley Act, which declares it an unfair labor practice to attempt to force an employer to discriminate against an employe because of his union status.

OFFICIAL PROPOSALS

Bids: August 2, 1955

West Delaware Tunnel Contracts 451, 452, 453, 454 and 455

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Daylight Saving Time (10:00 A.M., Eastern Standard Time), on Tuesday, August 2, 1955, for the following five contracts for the construction of the West Delaware Tunnel of the Delaware System, comprising about 44 miles of concrete lined pressure tunnel, circular in section and 11 feet 4 inches in finished diameter, and Shafts 1 to 7, inclusive, 14 feet in diameter, which will be circular in section and lined with concrete, all as set forth in the specifications, as follows:

CONTRACT 451, for the construction of about 43,000 linear feet of tunnel, including an intake channel and Shaft 1, approximately 520 feet deep, located in the Towns of Tompkins and Hancock, Delaware County, New York.

CONTRACT 452, for the construction of about 60,000 linear feet of tunnel, including Shaft 2, approximately 310 feet deep, and Shaft 3, approximately 460 feet deep, located in the Towns of Hancock and Colchester, Delaware County, New York.

CONTRACT 453, for the construction of about 26,000 linear feet of tunnel, including Shaft 4, approximately 380 feet deep, located in the Towns of Colchester, Delaware County, and Rockland, Sullivan County, New York.

CONTRACT 454, for the construction of about 60,000 linear feet of tunnel, including Shaft 5, approximately 760 feet deep, and Shaft 6, approximately 780 feet deep, located in the Towns of Rockland and Neversink, Sullivan County, New York.

CONTRACT 455, for the construction of about 42,000 linear feet of tunnel, including Shaft 7, approximately 650 feet deep, and the tunnel outlet, located in the Town of Neversink, Sullivan County, New York.

A bidder on two or more of the five contracts may, if he so desires, specify in the bid form a percentage reduction from the total cost of the particular contract for which he is then bidding, which he will agree to make if he is awarded that contract together with one or more of the other four contracts.

Pamphlets of the five contracts containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1317, at the above address, upon application in person or by mail, by depositing the sum of $5.00 in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

READ THE OFFICIAL

PROPOSAL COLUMN OF

ENGINEERING NEWS-RECORD

THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $1.80 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division,
Engineering News-Record
330 West 42nd Street
New York 36, N. Y.

Bids: July 21, 1955

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 21st day of July 1955, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, N. F. Ronan, Acting District Engineer, 353 Broadway, Albany, N. Y.						
Warren and Essex	FARC 55-44	Loon Lake–Pottersville–Taylors, S. H. 692 Taylor-Schroon Lake Village, S. H. 745 Proj. F-383(10)	7.81	9" Cem. Conc. Pavt. 24′ Wide = 7.78 Mi. Asp. Conc. Opt. = 0.03 Mi.	$100,000 Plans $25	$1,814,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Madison	FARC 55-48	Syracuse Turnpike, Pt. 1 S. H. 9023 Syracuse Turnpike, S. H. 337, Syracuse Turnpike, Pt. 3 S. H. 9022 Proj. F-470(18); S-769(2)	3.94	Asphalt Concrete, Optional	$45,000 Plans $15	839,000
Herkimer	M.T. 55-5	New York State Thruway Mohawk Section—Subdivision 11A and 12A At Sites of Indian Castle Gas Station-Restaurant, Types A and CM	—	Grading, Paving and Misc. Work	$27,000 Plans $10	491,000
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Building, Syracuse, N. Y.						
Onondaga........	FARC 55-45	Baldwinsville–Cold Spring, S. H. 671 Project S-405(1)	3.77	Asphalt Concrete, Optional	$22,000 Plans $10	405,000
Cayuga	FARC 55-50 R.C. 55-51	Auburn-Elbridge, S. H. 592 Project F-441(4)	5.53	Asphalt Concrete, Type 1A	$20,000 Plans $10	351,000
DISTRICT No. 4, E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester 1, N. Y.						
Monroe	LOSP 55-1	Lake Ont. State Parkway Sect. D (Dewey Ave. Interchange)	0.21	Grading and Drainage Hy. Sep. Comp. I-Beam 75.2′	$19,000 Plans $10	332,000
Monroe	LOSP 55-2P	Lake Ont. State Parkway Sects. B-C-D (Paving) (Long Pond Road and Ramps)	5.62 (2.82) (Acc.)	Asp. Conc. Opt.=8.23 Mi. Misc. Work = 0.21 Mi. R. C. Rig. Frame Hy. Sep. 98′	$115,000 Plans $50	1,926,000
DISTRICT No. 5, C. R. Waters, District Engineer, State Office Building, 65 Court St., Buffalo, N. Y.						
Chautauqua	FARC 55-43	Kennedy-Ellington, S. H. 9071 Project S-453(1)	4.13	Asp. Conc., Optional	$27,000 Plans $15	468,000
Chautauqua	E. T. 55-2 S.T. 55-3	New York State Thruway-Erie Section-Sub. E-3A (Brockton to Pomfret Town Line); Lake Road; Berry Road; Van Buren Road; Chestnut Street; Lowell Road and Farel Road	5.28 (1.07) (Acc.)	9" Two Course Cem. Conc. Pavt. 2 @ 25′ Wide = 5.26 Mi. Bit. Mac. Ty. 1 = 0.79 Mi. Surface Treated Gravel = 0.28 Mi. Misc. Work = 0.02 Mi. 4 Hy. Seps. Comp. I-Beams 306′, 376.7′, 296.5′, 291′ 3 Brs. Twin Boxes 36′, 36′ and 28′ 1 Br. Comp. I-Beam 154′	$270,000 Plans $100	4,894,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Clinton, Franklin, Jefferson and Lewis	R.C. 55-46	Br. No. 1, S. H. 930; Br. No. 1 and No. 2, S. H. 5647, Br. No. 4, S. H. 1089 Br. No. 1, S. H. 5332A, Br. No. 4, S. H. 1908 and Br. No. 1, S. H. 8337 Br. No. 1, S. H. 1252	—	Cleaning and Painting 8 Bridges	$1,100 Plans $10	20,000
DISTRICT No 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Rockland	C.T. 55-8	New York State Thruway–Catskill Section-Subdivision 7 at Sites of Sloatsburg Gas Station-Restaurant (Types AA and CM)	—	Grading Paving and Misc. Work	$35,000 Plans $15	660,000
Orange	FASS 55-3	Thompson Ridge–Sullivan County Line, County Road No. 48 Project S-415(1)	2.89	Foundation Course Gravel (Double Surface Treatment) = 2.82 Miles, Grading = 0.07 Miles	$10,000 Plans $10	176,000
Dutchess	FARC 55-47	South, S. H. 223 Project U-394(12)	1.65	Asp. Conc., Optional	$30,000 Plans $10	538,000
Rockland	PIP 55-1 RC 55-52	Palisades, Int Parkway, Sect. 2 (Route 303 to Convent Road) New Jersey State Line–Congers Pt. 1, S. H. 1898	2.10 (0.53) (Acc.)	Grading and Structures = 1.76 Miles 9" Cem. Conc. Pavt = 0.34 Mi. Asp. Conc., Opt.= 0.53 Mi. 1 Br Sep. Comp. I-Beam 204.3′ 3 Hy. Seps. Rig. Frames 136.5′, 46.7′ & 149′	$180,000 Plans $50	3,306,000
DISTRICT No. 9, F. W. Donovan, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Otsego	R.C. 55-53	East Springfield-Cherry Valley, S. H. 934 Cherry Valley–Sharon Springs, Sharon Springs–Canajoharie, Pt. 1, S. H. 8064	6.39	Asp. Conc., Opt.	$14,000 Plans $10	255,000
Schoharie	FARC 55-49	Middleburg–Franklinton, Pt. 2, S. H. 8340 Livingstonville–Preston Hollow, Pts. 1 and 2, S. H. 8377 Project F-491(4)	6.46	Asp. Conc., Opt.	$45,000 Plans $10	769,000
DISTRICT No. 10, M. E. Goul, District Engineer, Montauk Highway, at Little East Neck Road, Babylon, L. I., N. Y.						
Nassau	PSC 7278-8966	Elimination of Grade Crossings of the Long Island Railroad with Various Streets in the Hamlet of Baldwin and Village of Freeport.	0.35 (1.56) (R.R.)	Railroad Relocation = 1.56 Miles Asp. Conc., Opt. = 0.26 Mi. Cem. Conc. Pavt. = 0.09 Mi. 4 Plate Girders 86′, 85.5′, 69′ and 76.5′ 1 Viaduct and Station 920′	$158,000 Plans $100	2,868,000
Suffolk	SMSP 55-1	Sunken Meadow Spur Parkway (Contract No. 6)	7.02 (4.06) (Acc.)	8" Cem. Conc. Pavt. 2 @ 25′ Wide = 4.81 Miles Asp. Conc., Opt.= 0.07 Mi. Misc. Work = 2.14 Mi. Acc. Rds. Cem. Conc. Pavt. = 3.81 Miles Acc. Rds. Asp. Conc., Opt. = 0.25 Miles	$140,000 Plans $50	2,514,000
Suffolk	B. P. 55-12	Beach Protection at Cedar Beach, North Shore, Town of Brookhaven	—	4 Concrete Block Groins and Timber Bulkhead	5% of Bid Plans $10	93,700

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: July 12, 1955

Contracts 442, 443 and 445

MARGARETVILLE-ARKVILLE SEWAGE TREATMENT PLANT

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Daylight Saving Time (10:00 A.M., Eastern Standard Time), on Tuesday, July 12, 1955, for each of Contracts 442, 443 and 445 for the constructing and equipping of the Margaretville-Arkville Sewage Treatment Plant, located in the Town of Middletown, Delaware county, New York, all as set forth in the specifications, as follows:

CONTRACT 442, for the construction of the Margaretville-Arkville sewage treatment plant. The sewage treatment plant will consist of a control building, a digester building, two primary settling tanks, four sludge drying beds in a glass enclosure, a sludge lagoon, a filter dosing tank, six intermittent sand filter beds, a water supply system, an unsewered wastes tank, an outlet sewer and various equipment, systems of piping and other appurtenances required for the operation and control of the plant. The building superstructures will have brick walls with flat roofs of reinforced concrete slabs. The construction of an outfall sewer, 15 inches in diameter and about 1,720 feet long, and an access road, about 1,800 feet long with a paved width of 18 feet, are also included in the work of this contract.

CONTRACT 443, for furnishing, delivering, installing and testing heating, ventilating and appurtenant equipment. The heating system to be installed in the control building consists of a thermostatically controlled, oil-fired, low pressure steam system with one radiator and four propeller-fan type unit heaters. In the digester building the heating system consists of a thermostatically controlled, two zone, recirculating hot water system with two radiators and one propeller-fan type unit heater supplied by hot water generated by the sludge digester heater to be installed under Contract 442. The ventilating equipment to be installed includes nine stationary roof ventilators for the control building, digester building and water service pump chamber, four elbow type exhaust fans at the roofs of the control and digester buildings and a small exhaust fan in the water service pump chamber.

CONTRACT 445, for furnishing, installing and testing electric systems and miscellaneous electrical equipment, and caring for, installing and testing substation and control equipment furnished by The City.

Pamphlets containing informatioin for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., of each contract, can be obtained in Room 1317 at the above address, upon application in person or by mail, by depositing the sum of $5.00 in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings, for their own use may secure same, the cost thereof to be paid by them. For further particulars apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4460) will be received at Winters, California, until August 11, 1955, for furnishing labor and materials for earthwork, structures, and surfacing for Relocation of California State Highway Route 102, from 15 miles east of Rutherford to Route 6, Monticello Reservoir, Solano Project, California. Location in Napa County, California. Principal items are 350,000 cu. yds. excavation for road and structures; 1,320 cu. yds. concrete; 46,500 tons untreated rock base and aggregate for plant-mixed surfacing; 100,000 lbs. structural steel in bridge; and other work. Completion time 270 days. For particulars, address Bureau of Reclamation, P. O. Box 546, Winters, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: July 22, 1955

The Board of Education of Newark In the County of Essex

Sealed proposals will be received in the Board Room, 4th floor, Board of Education Administration Building, 31 Green Street, Newark 2, New Jersey on Friday, July 22, 1955, between 10:00 and 10:05 A.M., Daylight Saving Time, publicly opened and read, for

CLINTON PLACE JUNIOR HIGH SCHOOL
Contract No. 1. General Construction Work
2. Structural Steel and Miscellaneous Metal Work
3. Plumbing Work
4. Heating & Ventilating Work
5. Electrical Work
6. Kitchen Equipment

Separate proposals must be submitted for each category of work separately listed above.

The following documents applicable to the proposals are obtainable at the office of Joseph H. Schotland, Assistant Superintendent of Schools in Charge of Business Administration, on the 4th floor of the administration building at the above address:—proposal form; instructions to bidders; contract form; form of performance bond; plans and specifications; questionnaire; and form of envelope for transmission of proposals.

All proposals must be submitted on the prescribed form. Information as to security required with each proposal is contained in the above documents.

The Board reserves the right to reject any or all proposals, and to waive any informality in any proposal.

By order of
The Board of Education of Newark
in the County of Essex
June 23, 1955

COMMONWEALTH OF MASSACHUSETTS. Department of Public Works. NOTICE TO CONTRACTORS. Sealed proposals for elimination of the Boston & Maine Railroad Grade Crossing at Mill and Norman Streets in the City of SALEM comprising demolition of buildings, permanent underpinnings of buildings, construction of underground structure, station platform, pedestrian overpass, retaining walls, ventilation structure with equipment, relocation of sewer and water systems, street paving, and other associated work will be received at Room 427, 100 Nashua Street, Boston, Mass., until 2:00 P.M. of TUESDAY, August 9, 1955, and at that place and time publicly opened and read. Proposal guaranty: $100,000. Charge for plans and proposal forms: $50.00; amount returnable only to bidders. Complete information at said office; plans on display at District offices. Plans and specifications available on or after July 1, 1955. Minimum wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to undertake and complete the work. By: JOHN A. VOLPE, Commissioner of Public Works. June 25, 1955.

Bids: July 19, 1955

The Hydro-Electric Power Commission of Ontario

ST. LAWRENCE POWER PROJECT
CHANNEL IMPROVEMENTS
EXCAVATION AT AND ADJACENT TO GALOP ISLAND

SEALED TENDERS, in quadruplicate, addressed to the undersigned, 620 University Avenue, Toronto 2, Ontario, and clearly marked
"TENDER FOR ST. LAWRENCE POWER PROJECT
CHANNEL IMPROVEMENTS
EXCAVATION AT AND ADJACENT TO GALOP ISLAND"
will be received up to 4:30 o'clock p.m., Eastern Daylight Saving Time, on
TUESDAY, JULY 19, 1955
for approximately 14,500,000 cubic yards of common excavation and 1,000,000 cubic yards of rock excavation at and adjacent to Galop Island, St. Lawrence River.

The work, comprising wet and dry excavation, construction of cofferdams and rock embankments, is to be completed as follows: Stage I by April 1, 1957; Stage II by December 1, 1957; Stage III by July 1, 1958.

All dredging under this contract must be performed by a corporation duly incorporated under the laws of Canada, or a province thereof, prior to June 1, 1955, and the dredges and other marine plant which are intended to be employed on this work shall have been duly registered in Canada on or before the 31st day of December 1952, if registration is applicable thereto, or shall have been built entirely in Canada subsequent to that date.

Copies of the tendering documents may be obtained on or after June 21, 1955, at the office of the Director of Supply, Ontario Hydro, 620 University Avenue, Toronto 2, Ontario, on payment of $25.00 for each set. This charge will not be refunded.

Tendering documents may be inspected at the above location and at the offices of the following: the Commission's Field Office, Cornwall, Ontario; Power Authority of the State of New York, 270 Broadway, New York 7, New York; and Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts.

Tenders must be accompanied by a certified cheque drawn on a Canadian chartered bank for the sum of one million dollars ($1,000,000). Provisions for the return of the cheque appear in the tendering documents.

The successful tenderer will be required to furnish a performance bond in the form approved by the Commission and issued by a bonding company licensed as such in the Province of Ontario and acceptable to the Commission for one hundred per cent (100%) of the total amount of the contract.

The lowest or any tender will not necessarily be accepted.

E. B. EASSON
SECRETARY

Bids: July 11, 1955

Fairfax County, Virginia Integrated Sewerage System

ADVERTISEMENT FOR BIDS

Sealed bids will be received by the Board of County Supervisors of Fairfax County, Virginia, at the Office of the Sanitary Engineer, Fairfax, Virginia, until Monday July 11, 1955, at 2:00 o'clock P.M., Eastern Daylight Time, for the construction of:

CONTRACT NO. 38: Approximately 31,000 lineal feet of 8 to 30 inch sanitary sewers and appurtenances.

Plans, specifications, and contract documents may be examined and copies thereof may be obtained at the Office of the Sanitary Engineer, upon payment of Ten Dollars ($10.00) per set, which amount shall not be returnable.

Contractors, whether resident or nonresident in Virginia, will be required to show evidence of a Certificate of Registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered.

Each bid must be accompanied by cash, certified check, or an acceptable bidder's bond in an amount not less than 5% of the amount of bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

COUNTY OF FAIRFAX, VIRGINIA
By: Harry L. Hale
Sanitary Engineer
Dated: June 15, 1955

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: August 3, 1955

Water System Improvements

ADVERTISEMENT FOR BIDS

NOTICE IS HEREBY GIVEN that sealed proposals for furnishing all plant, labor, and materials for the construction of WATER SYSTEM IMPROVEMENTS in the City of Altoona, Blair County, Pennsylvania, will be received by the Altoona City Authority, at the Police Courtroom, in the City Hall, Altoona, Pennsylvania at 10:00 O'clock A.M. (E.D.S.T.) on Wednesday, August 3, 1955, at which time the proposals will be publicly opened and read aloud.

The work will be divided into five contracts, designated as:

CONTRACT NO. 16—Guniting Prospect and Super High Reservoirs, and foundations for three (3) Steel Tanks.

CONTRACT NO. 17—Furnishing and erecting three (3) Steel Storage Tanks (Two tanks to be 300,000 gallon capacity each and one tank to be 100,000 gallon capacity).

CONTRACT NO. 18—Transmission and Distribution Lines (Approximately 16,500 L.F. of 8" asbestos-cement or C.I. "Roll-on" joint pipe and approximately 57,500 L.F. of 10", 12", 16", 20" and 24" C.I. M.J. pipe, with related appurtenances, repaving, and miscellaneous work.

CONTRACT NO. 19—General Contract for Construction of Mill Run Dam and Reservoir. (Earth dam 1200 feet in length, 90 feet high, slope 1:3, with concrete spillway, concrete lined spillway discharge channel; concrete intake; cast iron outlet pipe; meter house; access road, and various items of related construction).

CONTRACT NO. 20—Electrical Work for Mill Run Dam and Reservoir and for Prospect Reservoir.

Information for Bidders, Form of Proposal, Form of Contract, Specifications and Plans pertaining to all contracts may be examined at the office of Lewis L. Gwin, Consulting Engineer, 1100 13th Avenue, Altoona, Pennsylvania, and at the office of Albright & Friel Inc., Consulting Engineers, 121 So. Broad Street, Philadelphia 7, Pennsylvania.

The above documents pertaining to Contracts Nos. 16, 17, 18 are contained in a single set of plans and specifications, which may be obtained at the office of Lewis L. Gwin, 1100 13th Avenue, Altoona, Pennsylvania, upon the deposit of One Hundred Dollars ($100.00) for each set of documents. Checks for such deposits are to be made out to Lewis L. Gwin.

The above documents pertaining to Contracts Nos. 19 and 20, may be obtained at the office of Albright & Friel Inc., 121 So. Broad Street, Philadelphia, Pennsylvania upon the deposit of Fifty Dollars ($50.00) for each set of documents. Checks for such deposits are to be made out to Albright & Friel Inc.

If the documents are returned in good condition to the office from which they were obtained within FIVE (5) days after opening of bids, the full amount of the deposit for one set will be refunded to each actual bidder, and other deposits will be refunded with a deduction of one-half of the deposit to defray the cost of reproduction of the documents. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

Bids shall be submitted on the applicable Form of Proposal, which is to remain attached to the document, and shall be enclosed in an opaque sealed envelope addressed to: "The Altoona City Authority, City Hall, Altoona, Pennsylvania, Attention of: John H. Dillen, Secretary," and the envelope shall be plainly marked thus: "Bid for (Bidder shall insert Contract No. or Nos. and Contract Designation) for Altoona City Authority, Altoona, Pennsylcania", and the name of the bidder.

Each bid must be accompanied by a certified check or bid bond made payable to the ALTOONA CITY AUTHORITY, in amount equal to 5% of the total bid, as a guarantee that in case the contract is awarded to the bidder, he will within ten (10) days thereafter, execute such contract and furnish duly executed Performance and Labor Materialmen's Bonds.

The Altoona City Authority reserves the right to reject any or all bids, to accept or reject any or all sections or items of any bid, and to waive any informality in bids received, unless such bid is qualified by specific limitation. Conditional bids will not be accepted.

No bid may be withdrawn within sixty (60) days after the actual date of the opening thereof.

JOHN H. DILLEN
SECRETARY OF THE AUTHORITY
JUNE 20, 1955

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4440) will be received at Loveland, Colorado, until July 26, 1955, for furnishing labor and materials for additions to Fort Morgan Substation, Colorado-Big Thompson Project. Location in Morgan County, Fort Morgan, Colorado. Principal items are 500 cu. yds. excavation for structures, substation addition and access road; 280 cu. yds. backfill; 28 cu. yds. concrete; 11,000 lbs. furnishing and erecting steel structures; 850 lin. ft. furnishing and installing No. 4/0 and No. 4 copper cable for grounding system; 420 lin. ft. furnishing and installing rigid and strain buses; 7 transformers, installing power and current transformers; 1,725 lin. ft. installing power and control cable; and other work. Completion time 200 days. For particulars, address Bureau of Reclamation, P. O. Box 449, Loveland, Colorado; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: July 26, 1955

Contract NYA-710.001

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
SERVICE ROAD AND UTILITIES TO HANGAR SITES

Sealed proposals for the construction of a service road and the furnishing and installation of utilities to hangar sites at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, July 26, 1955, at which time said proposals will be opened and read in Room No. 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, June 30, 1955

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Estimator, for firm doing extensive sewer, watermain, treatment plant, heavy construction. Must be graduate engineer or have extensive engineering background, with ability to obtain price and job information. Permanent position for qualified applicant. P-6074, Engineering News-Record.

Construction Foreman for firm engaged in extensive sewer, water main and treatment plant facilities. Permanent position in N. Y. State area. Only qualified applicants with broad experience. P-6595, Engineering News-Record.

Wanted: Instructor in engineering drawing and descriptive geometry. Salary $3600 for 9 month period. Dept. of Engr. Drawing, University of North Dakota, Grand Forks, North Dakota.

Young man, architectural or construction background, to promote building products for basic metal trade association. Salary $5,000 to $7,000 depending on qualifications. Headquarters NYC, some travel. P-6707, Engineering News-Record.

Petrographer: Experienced in mineralogical and petrographic examination of cement, concrete and concrete aggregates. Write fully regarding experience, education, date available and salary required. Midwest location. Permanent. P-6770, Engineering News-Record.

Architect—Qualified through training and ex-perience to design churches, schools and other buildings. Give full information as to education, experience, salary requirements and when available. Location Eastern New York. P-6735, Engineering News-Record.

POSITIONS VACANT

Architectural, Civil, electrical, mechanical, structural and traffic engineers are needed for expanding programs for either field or office assignments on a wide variety of municipal projects. Recent graduates start at $4613. Higher positions available depending on length and type of experience. For information write: Detroit Civil Service Commission, 612 City-County Building, Detroit 26, Michigan.

City Planners and Architects interested in city plan work are needed for intensified programs in neighborhood conservation and rehabilitation, transportation, central business district, and other special studies. Recent graduates start at $4613. Higher positions available depending on length and type of experience. For information write: Detroit Civil Service Commission, 612 City-County Building, Detroit 26, Michigan.

Application Engineer for sales office of com-pany manufacturing chlorination equipment of water and sewage treatment. This is a rapidly growing new division of an organization well established in the industrial instrument field. Excellent opportunity for ambitious man with sanitary engineering education and experience. Reply to P-6804, Engineering News-Record.

Superintendent-Foreman — aggressive and thoroughly experienced in commercial and institutional building construction. Capable of organizing and directing complete projects. Excellent opportunity with a long established firm. Location Birmingham and North Alabama. P-6809, Engineering News-Record.

Exp. steel detailer for consultant's office in Ohio. Submit experience resume to P-6897, Engineering News Record.

Engineers—Experienced in design and pre-preparation of plans for water works and sewerage systems and structural design. Advise education, experience, salary requirements and when available. Location Eastern New York. Reply P-6736, Engineering News-Record.

(Continued on following page)

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • **OPPORTUNITIES** • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:

(Not available for equipment advertising)

$1.80 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

PROPOSALS, $1.80 a line an insertion.

INFORMATION:

BOX NUMBERS count as 1 line additional in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

EQUIPMENT WANTED or **FOR SALE** Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:

The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

EMPLOYMENT ADVERTISING:

New Employment Opportunities Section for Displayed ads starting July issue. For details see announcement ad in this section.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.

E.N.R.

Send **NEW ADVERTISEMENTS**: To New York Office, 330 W. 42nd St., N. Y., for July 14th issue closing July 1st

ESTIMATOR

Large midwest engineering and construction firm has opening for man with prior estimating experience in the gas, oil and petroleum fields.

This man must be able to assume complete responsibility for take-off and setting up an estimate. Ability to do preliminary layout work desirable.

In reply, furnish a detailed resume of your education, experience, references and salary requirements.

P-6872, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

South AMERICAN Positions Open

MECHANICAL ENGINEER with several years experience in actual supervision of large shops comprising machine shops, plate and welding shops, iron, steel and brass foundries.

DESIGN DRAFTSMAN for Mechanical Department's Engineering Office.

TRAINMASTER to cordinate all sections of Operating Division, including supervision of train crews, dispatchers, yard and station forces, car distribution, etc.

MAINTENANCE ENGINEER (OR MILL MASTER MECHANIC)—graduate Mechanical Engineer to take charge of all mechanical maintenance and repairs for all equipment throughout Concentrator Plant and operations. Should have good understanding of metallurgical processes and equipment.

FIELD ELECTRICAL ENGINEER with thorough knowledge of characteristics and applications of power equipment for industrial use.

GENERAL SMELTER FOREMAN AND ASSISTANT GENERAL SMELTER FORMAN with good suitable technical educations and all around smelter operating experience. Should have executive ability and be able to assume responsibility.

SMELTER METALLURGIST AND ASSISTANT SMELTER METALLURGIST to work on metallurgical problems and smelter operations.

Large Copper Company Chile, South America. 3-year contract. Transportation both ways and salary while traveling paid by Company. Good opportunities. In reply give complete details.

P-6892, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CHIEF ENGINEER

Experienced in construction and maintenance of bulk oil terminals. Excellent opportunity with top, expanding company.

P-6855 Engineering News Record
330 W. 42 St. New York 36, N. Y.

ENGINEERS

Foreign Service

Graduate Chemical, Mechanical, and Electrical Engineers with minimum of 5 years' experience. For specialized assignments commensurate with qualifications in various phases of project and process engineering. Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 30
ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE, NEW YORK 22, N. Y.

INDUSTRIAL ENGINEER

2-3 years experience in methods, motion and time study, cost reduction and surveys. Must be a self-starter, capable of taking over small department in Birmingham, Ala. area. Excellent opportunity for right man to progress. Knowledge of predetermined time standards and standard data techniques advisable, but not prerequisite. Submit complete resume of background and experience to

P-6824, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Attention . . .

EMPLOYMENT ADVERTISERS

Effective with the first July issue, a new section will start in ENGINEERING NEWS-RECORD. We will head this section: EMPLOYMENT OPPORTUNITIES. All Displayed Employment Opportunity advertising will be placed in this new section, with the exception of those advertisers who contract for run-of-book positions. New advertisers will be billed at the transient rate of $24.25 unless on contract. Contract rates furnished on request. Advertisements are subject to Agency Commission.

WANTED: ASS'T TRAFFIC ENGR.

For traffic engineering department just recently established. Salary range $537 to $620 a month with maximum salary obtainable through annual and longevity increases. Registration as a professional engineer required. Applications accepted until the needs of the service are filled.

Write Personnel Department
City Hall, Madison 3, Wis.

POSITIONS VACANT

(Continued from preceding page)

Experienced highway superintendent for New England area with a progressive company. Permanent position. Excellent opportunity for advancement. State qualifications, and starting salary desired. P-6841, Engineering News-Record.

Structural Steel Draftsman and estimator must have minimum of 5-10 years' experience in structural steel detailing and estimating. Starting salary $5-7,000. Good future with structural steel fabricating company in Ohio. P-6650, Engineering News-Record.

Position available instructor or assistant professor in civil engineering in New England college. Appointee to teach mechanics, mechanics of materials, soil mechanics and surveying. P-6858, Engineering News-Record.

Draftsman—Experienced structural steel detailer and checker for building construction. Permanent. All employee benefits, paid vacation, insurance, etc. Submit resume and salary desired. Barber & Ross Company, 5th & V Sts., N. E. Washington, D. C.

Highway Inspectors—Thoroughly experienced. For bridge and structures. Grade & drain. Concrete pavement. Bituminous concrete pavement. Also highway designers & draftsmen for structures and roadway. Work on highway projects in Central part of United States. Reply should include details of education, experience and salary requirement. Each response to this will receive prompt attention and reply. P-6882, Engineering News-Record.

Estimator, with at least four years experience in the field on foundation and bridge work, who has actually prepared estimates of cost for heavy construction. Applicant should be an engineer about thirty-five years of age. Work will be in Pittsburgh office of well established contractor. P-6916. Engineering News-Record.

Civil Engineer for local road survey, design and construction. Prefer man with Illinois V. S. S. or Twp. M.F.T. experience. State education, experience, reference and salary expected. Hancock County Highway Dept. Carthage, Illinois.

Sales Promotion and technical service engineer. Some experience in concrete and cement. Graduate preferred but experience may be substituted. Location New York. Considerable traveling N. E. States. Submit complete details, age, experience and salary expected. P-6895, Engineering News-Record.

Assistant Chief, Water pumping stations salary $4930 to $6192 per year. Excellent opportunity with Philadelphia's Water Department. Vocational or high school graduation plus six years of experience in the field of large electrical pumping stations operation and maintenance, including three years in a supervisory capacity. Civil service security, paid vacations, health and welfare plans, and sick leave. For further information contact Personnel Application Office, Room 127, City Hall, Philadelphia 7, Pennsylvania, before August 15, 1955.

Laboratory technician thoroughly experienced in highway construction, asphalt and concrete construction, and testing of materials. Excellent opportunity for experienced man in old established testing laboratory. Gulf Coast area. Reply P-6913, Engineering News-Record.

(Continued on page 82)

CONSTRUCTION EQUIPMENT ENGINEERS

Graduate engineers with minimum 5 years' experience designing, selecting, specifying and/or supervising operations of construction equipment such as crawlers, rubber-tired tractors, shovels, cranes, air compressors, welding machines, pumps, mixers, spreaders, fork lifts, etc.

To consult with manufacturers and suppliers on selection and modification of the abovementioned equipment. For company's Equipment Engineering Division located in New York City. Salary good; liberal benefits.

Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 57
ARABIAN AMERICAN OIL COMPANY
505 Park Avenue, New York 22, New York

DEPUTY BUILDING INSPECTION SUPERVISOR: Graduation from an accredited four years college with degree in structural or architectural engineering. Seven years of experience in the structural design of buildings and some experience in examination of plans and specifications of building projects and applications for building permits. Salary $5772-$6812 per year.

ARCHITECT I: Graduation from a college or university of recognized standing with a degree in architecture and 2 years experience in architectural planning, design or drafting. Salary $4628-$5460 per year.

Complete details by writing to:

DIRECTOR OF PERSONNEL
Municipal Building, Hartford, Conn.

Sales Engineers

A major steel company has need for sales engineers in its rapidly expanding prefabricated steel building division. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan. Openings in Baltimore, Philadelphia and Pittsburgh.

P-6003, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CIVIL ENGINEER

With municipal experience, particularly in street, sewerage and drainage work. Should be able to qualify as Chief of Party.

Apply Director of Public Works
Wakefield, Mass.

SEWERAGE WORKS ENGINEER

Greenwich, Conn.

Salary range $5472-$6600
open competitive examination
applications accepted until Aug. 1
Personnel Office—Town Hall—Greenwich, Conn.

HIGHWAY ENGINEERS

Designers, Detailers and Draftsmen for office work on highways and expressways. Long-term projects. Desire experience or training including alignment and profile computations, geometric design of interchanges and associated work.

Employee Benefit and Retirement Plan, paid vacations and holidays, sick leave. Modern, air conditioned offices in downtown St. Louis. Please write fully to or inquire at

SVERDRUP & PARCEL ENGINEERING CO.

1625 Eye Street, N. W.
Washington 6, D. C.

1134 Locust
St. Louis 1, Mo.

ENGINEERS—TECHNICIANS

Experienced in Concrete, Soils mechanics, Asphalt paving, Geology and Highway engineering. Also Cement and Asphalt Chemists.

LARGE INDUSTRIAL AND HIGHWAY PROJECTS

Long term employment and advancement opportunities, paid vacations, hospitalization and insurance.

Please submit complete resume of experience, education, earliest date available and salary requirements.

TOLEDO TESTING LABORATORY

1810 North 12th Street
Toledo 2, Ohio

Earthmoving Equipment Sales Manager Wanted

Leading manufacturer of nationally known earthmoving equipment has need for a business minded sales manager in a rapidly expanding organization. Must be aggressive, have thorough knowledge of business, and background of proven performance. Excellent opportunity for the right man to become associated with a top progressive corporation. Applicant must be between 38 and 50 years of age and willing to travel. Salary open. Write giving complete particulars as to experience, qualifications, and educational background. All replies treated confidentially. Write:

P-6875, Engineering News-Record
330 W. 42nd Street, New York 36, N. Y.

FABRICATED STRUCTURAL STEEL AND PLATE ESTIMATORS

Large Southern fabricator has openings for fabricated structural and/or plate estimators familiar with field erection costs. Preferably engineering graduates with two years practical experience. Forward resume with salary expected to:

P-6702, Engineering News-Record
330 West 42nd Street, New York 36, N. Y.

All replies will be confidential

STRUCTURAL ENGINEER

Structural steel designer and estimator for industrial buildings and miscellaneous steel structures. Applicant should be graduate engineer, preferably 35-45 years old, with a minimum of 5 years of actual structural steel design experience. Permanent employment with top pay, paid vacations, group insurance plan, pension plan. Excellent opportunity. Location is in Mid-West. Employer is nationally known, well established steel fabricator.

Reply fully, giving resume of experience, education, age and salary requirements to

P-6749, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

DESIGN ENGINEERS

Permanent opportunities for qualified engineers experienced in design of:

STRUCTURAL STEEL
REINFORCED CONCRETE
HEAVY MACHINES

Applicable to design of Blast Furnaces, Ore Beneficiation Plants and similar heavy structures

also

PIPING
DESIGN AND LAYOUT

Applicable to Oil Refinery and Petro-Chemical Plant design

TOP EARNINGS—PENSION PLAN
MANY OTHER BENEFITS

Please contact or write:

Edward A. Kolner
ARTHUR G. McKEE & CO.
2300 Chester Ave. Cleveland 1, Ohio

Experienced Engineers, Designers Detailers, And Sales Engineer

Required for production Program on

CONCRETE

Batchers, Bins, Elevators, Silos, Aggregate Mixers, Central and Redi-Mix Plants, Portable and Stationary

BUCKETS

Clamshell, Dragline and Associated Types, Contractor and Industrial, hook-on and Electric

Company pays relocating expense; above average earning; salary and incentive. Age 28 to 50. M.E., E.E., C.E., background desired

Send complete resume to:

ERIE STRAYER COMPANY
Post Office Box 1031 **Erie, Pennsylvania**

POSITIONS VACANT

(Continued from page 80)

Experienced Civil Engineer is needed by the City of Fresno, California for a permanent civil service position. We want a man with degree in Civil Engineering who is familiar with structural and civil engineering theory, and with the Uniform Building Code. For further information: Civil Service Board, Room 203, City Hall, Fresno, California. Last day for filing application is July 29, 1955.

Wanted: Construction Superintendent by firm located in Illinois, must be experienced in sewer and water work all phases. Applicants furnish experience resume, references and salary expected. Can be permanent. P-6935, Engineering News Record.

Construction Sup't.—young Eng'r. about 30. Experienced commercial and industrial building construction. Only those having worked for building contractors need apply. Permanent. Settle down in one spot. Send resume. Wilmington, Chester, Oxford area, Pa. and Del. $100-125 salary. P-6933, Engineering News-Record.

POSITIONS WANTED

Supt. extensive experience on rock heavy blasting, open cuts shafts tunnels and earth moving. PW-6782, Engineering News-Record.

Construction Superintendent, or project manager. 25 years experience as a construction superintendent and project manager in heavy industrial construction. Especially experienced in oil refinery and chemical plant construction, as well as steel mill building, and government construction. Best references from previous employers, with excellent reccord of accomplishment. Available immediately. Reply to PW-6726, Engineering News-Record.

Construction Engineer—Reg. Prof. Engr. C.E. grad. 20 years construction experience 12 of which as supt. of construction. Know equipment, estimating, job pushing, cost control. Experience about 70% heavy 30% industrial. Age 41. PW-6737, Engineering News-Record.

Graduate Professional engineer and licensed surveyor desires position teaching civil engineering and related subjects. Ten years experience in design and construction for railroads, contractor and consulting firm. One year teaching experience. Reply PW-6810, Engineering News-Record.

Wanted job as field supt—have 28 years experience and am qualified for the job. PW-6796, Engineering News-Record.

Retired engineer, technologist, seeks lines, as manufacturers agent, builders, architects. PW-6847, Engineering News-Record.

POSITIONS WANTED

General Foreman or construction foreman. 20 years experience in heavy construction subways, tunnels, road & bridge work. Sewers utilities, foundations. PW-6774, Engineering News-Record.

Inspection: Highly experienced sewer foreman seeks engagement as sewerage inspector. PW-6901, Engineering News-Record.

Sewer Foreman, thoroughly experienced in sewerage and drainage construction desires responsible assignment. PW-6898, Engineering News-Record.

Shovel and dragline operator 20 yrs. experience operating all makes on all types of construction. 8 yrs. on 80D Northwest. Highly mechanical inclined. Desire job as supervisor or full time operating. Will go any place. PW-6908, Engineering News-Record.

General Superintendent, C.E. and Surveyor, 43, German graduate. English, Spanish, French, German perfectly. 20 years experience in heavy construction (highways, railroads, bridges, sanitation, etc.) with contractors, consultants, R.R. Co., on 3 continents, 4 yrs. Canada and USA. Field: supervision, operation, surveying. Office: management, estimates, bids, buying, costs, subcontractors. Will travel, also foreign. Available July 15. Box 1051, Oak Park, Ill.

Top flight tunnel supt 26 yrs experience in all types of ground. 11 yrs with present employer have supervised some of world's largest and most difficult underground project's, recently completed 18 mile tunnel in foreign country. At present finishing a 5 mile water tunnel, capable start to finish, have 1st class following. Understand men machinery and cost. Resume sent on request. I can get progress, salary straight or percentage. PW-6860, Engineering News-Record.

Carpenter-bridge foreman experience on all phases of bridge work would like work in N. Y. State or Pa. PW-6880, Engineering News-Record.

Field Accountant "No Middleman" experienced in running complete field office. Will relocate. PW-6874, Engineering News-Record.

Construction Superintendent & Engineer can handle large school church or factory. Prefer locate Cleveland area. PW-6912, Engineering News-Record.

Superintendent-Project Manager. Lic. Prof. Engr. N. Y. Qualified journeyman in carpentry & reinforcement. Background of 67 bridges, arch, & I-beams; commercial bldgs., laboratories etc. Special training in take-off, cost analysis & bidding. Now available. PW-6917, Engineering News-Record.

Sanitary Engineer 56 M.I.T. graduate top experience design, construction operation water supply, sewers, sewage treatment. Three jobs—30 years. Presently employed as executive. Available. 30 days. PW-6859, Engineering News-Record.

POSITIONS WANTED

Heavy Construction Manager. Thoroughly qualified in field, and office 26 years experience hydro, and steam plants, dams, tunnels and airbases. Construction wide, and cost-conscious now employed. Have had foreign experience. PW-6920, Engineering News-Record.

PART TIME WORK WANTED

Part Time work. Retired licensed structural engineer available for design, detailing and estimating. PTWW-6788, Engineering News-Record.

BUSINESS OPPORTUNITIES

For Sale: Very active, fully equipped, surveying practice and architectural service, Southern Nassau County. Principals only. BO-6723, Engineering News-Record.

For Sale construction co. in central U. S. A. with supervision and new equipment to handle approx. $3,500,000 of work each year. Reason bad health. BO-6764, Engineering News-Record.

Partners Wanted—Engineer with heavy background in bridges, tunnels, waterfront structures and industrial buildings, desires for new consulting venture top flight partners with 15 yrs experience in any of the following fields: express highways, heating and ventilation, power and lighting. A nominal investment will be required for office establishment. Please give full particulars. BO-6918, Engineering News-Record.

Business for sale, active, South Florida, qualified and licensed engineering corporation, primarily piling contractors, CPA operating statements available. Approx. $175,000 heavy equipment inventory. BO-6873, Engineering News-Record.

CONSTRUCTION BOOKLET

For planning and construction estimates by engineers and contractors. Copyrighted booklet of basic formula and sample charts for rapid and accurate estimating of grading quantities for highways, railroads, canals, dams, etc. Based on many years of actual experience. $3.00 per copy, postpaid. Send orders to D. Misz, 140 E. 63rd St., N.Y.C. 21.

LEARN ESTIMATING

Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:

TAMBLYN SYSTEM
1420 Gilpin St. **Denver 6, Colorado**

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
411 So. 5th Ave. **Lake Worth, Florida**

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty third year [illegible] without obligation

WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE MASS

Wanted Immediately:

1—50 ton Stiff Leg Derrick W/Hoist. Engine must be in good working condition.

W. J. Halloran Steel Erection Co.
303 Chapman Street
Providence, Rhode Island

Service to the Marine Industry on The Great Lakes

B & V EQUIPMENT COMPANY, Inc.
Rentals on Barges, Tugs & Scows
39 West Main St. **Williamson, N. Y.**
Phone 7131

FOR SALE or RENT

25 ton American Stiffleg Model 846 New 1951.
100 HP American 3D Elec. Hoist & Swinger.
100 HP Jaeger 3D Gas Hoists. NEW.
100 HP Lucey Portable Boilers. 200# WP.
30 yd Koppel & Western Dump Cars.
30 ton Whitcomb Diesel Loco. Rebuilt.
35 ton GE Diesel Elec. Locos. 36" ga.
80 ton GE Diesel Elec. Loco. New 1947.
25 ton Amer. Diesel Loco. Crane New 1941.
1½ yd P&H 655A Diesel Crane 1952.
2½ yd Manitowoc 3500 Diesel Crane.
7 yd P&H 621S Diesel-Elec. Walker Dragline.
45 ton Washington Electric Gantry Crane.

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis 1, Mo.

EUCLIDS

Use 13 yd. bottom dumps
Cummins & General Motors Powered
Located - Texas - Pa. - N. Y. State
Write, Wire or Phone
L. B. SMITH, INC.
Camp Hill, Penna.
Tel: Harrisburg, Regent 7-3431

NEW AND REBUILT
STORAGE BATTERY

LOCOMOTIVES

1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Pennsylvania

FOR SALE OR RENT—EASY TERMS

Rebuilt — A I Condition

48B Bucyrus Erie Shovel 2 cy Diesel
Caterpillar Auto Patrol No. 12
Caterpillar D8 Bulldozer
Caterpillar Scraper Model 80
3—Caterpillar DW 10's

WILLIAMS CONSTRUCTION COMPANY
Box 145 Balto. 20, Md. Murdock 6-6600

LOW COST INSTALLATION AND OPERATION

CABLEWAYS

IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT OR BUY

FOR
DAMS
BRIDGES
BREAKWATERS
FILTRATION AND
SEWERAGE PLANTS

FOR
SPEED
ECONOMY
EFFICIENCY
FLOOD SAFETY
LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

FOR RENT OR SALE

2- Size S-8 McKiernan-Terry
STEAM PILE HAMMERS
CONTRACTORS MACHINERY CO.
2645 Southwest Blvd., Kansas City 8, Mo.
Valentine 4740

CRANE

LORAIN Model 820
50' Boom, Waukesha Diesel Engine
New—1951
PRICE $27,500.00
ANDERSON EQUIPMENT CO.
Box 1737, Pittsburgh 30, Pa.
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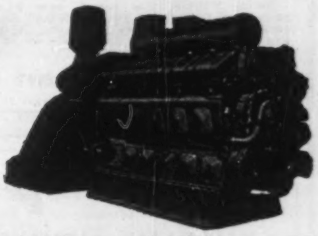

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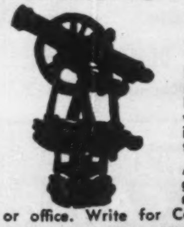

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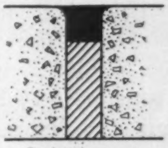

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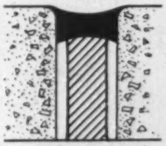

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EDITORIALS

A Broader Study Needed

The Upper Colorado River Bill, as it was approved by the Reclamation Subcommittee of the House of Representatives, authorized the President at the earliest possible date to appoint a board of "eminent disinterested engineers not presently employed by the government" to study and report on the controversial Echo Park reservoir and alternate proposals, also on the Cross-Mountain unit of the big project. Both studies are needed, especially the study of Echo Park dam, so that Congress may know whether acceptable substitutes are available and at what cost, if any, in reduced water and power. Construction of Echo Park Dam has been actively opposed because it will submerge part of a scenic canyon in a national park.

However, the study that Congress ought to have before it begins to appropriate money for the Upper Colorado River project should not be limited to those two elements. The board of engineers should be asked by Congress to take a detached look at the entire project. For example, Congress should be told whether the cost estimates are realistic, or whether actual costs probably will far exceed the optimistic estimates of the proponents, as was the case with the Colorado-Big Thompson project. And if the estimates appear low, Congress should be told what the actual cost of the power and irrigation water will be. Only in that way can Congress evaluate this vast undertaking properly.

Hot Weather Concreting

Comes the end of winter and contractors breathe a sigh of relief, feeling that with cold weather gone they need take fewer precautions to assure good concrete work. However, experience shows that more trouble may be encountered in controlling concrete quality during hot weather than in cold.

Stanton Walker and Delmar L. Bloem of the National Ready Mixed Concrete Association have just issued a timely warning on hot weather concreting to the members of that association. Because the same problems are faced by general contractors and builders, their admonitions are worth repeating:

Hot cement may raise the temperature of the concrete to the point of increasing water requirements and thus reducing strength.

High temperature may be more detrimental to concrete strength than low temperatures that do not go below freezing.

Hot cement also may contribute to the formation of cement balls. For example, if hot cement has an opportunity to contact damp sand or a small quantity of mixing water before its temperature has been reduced by mixing with the other ingredients, a quick stiffening may occur. The resulting partly set mass may be difficult or impossible to break up in subsequent mixing.

Rapid evaporation of water from concrete, as may occur in hot weather, is generally accompanied by a relatively large reduction in volume, leading to formation of cracks.

Obviously, to minimize hot-weather concreting problems, steps should be taken to prevent excessive concrete temperatures. Cement at 150 F or higher should not be used. Mixing water should be cool; sometimes it might be worthwhile to cool the water artificially or add ice, as has been the practice with mass concrete for dams. Also, aggregate stock piles may be cooled by spraying with water. Where mixed-in-transit concrete is being used, the time from charging the mixer to completion or discharge should be kept to a minimum. The normal limit of 1½ hours may be too long in extremely hot weather.

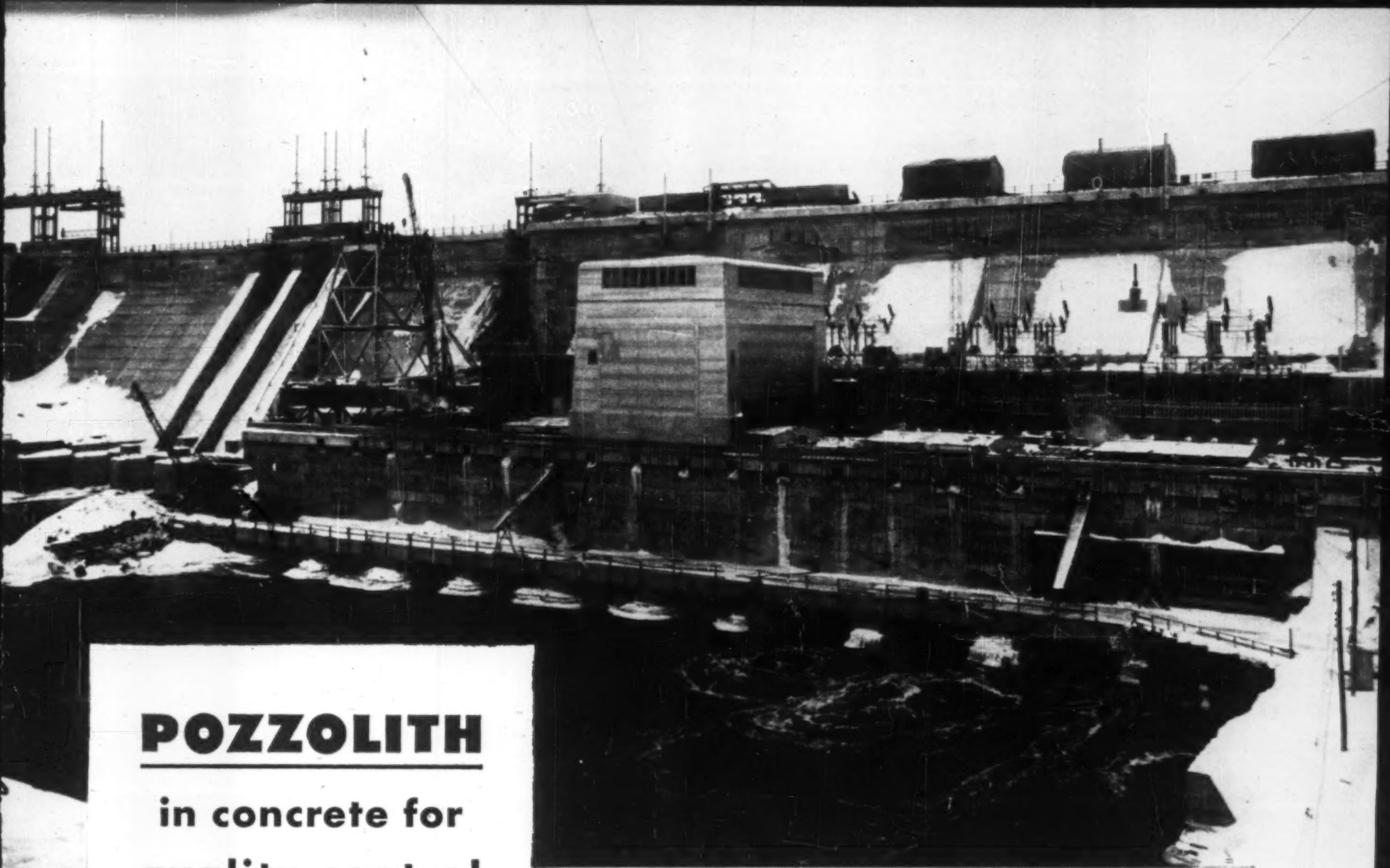
Concrete in exposed locations, such as highway pavements, should be promptly protected against rapid evaporation of water from the surface. Finally, test specimens should be properly cured and protected, so as not to indicate inaccurate low strengths. Here again, protection in summer may be more important than in winter.

An Acceptable Water Pollution Compromise

Sensible revision has been made in the bill (S.890) to extend the expiring Water Pollution Control Act of 1948. Revision came after hearings at which state and interstate agencies argued their prime responsibility for pollution abatement on the nation's streams, as against that of the U. S. Public Health Service, which, through the medium of a revised act, sought a freer hand for federal action against pollutors of interstate streams.

The 1948 law requires that the state where unabated pollution of interstate waters occurs give its consent before federal action is taken. In its original draft of S.890, the Public Health Service would have changed the law to avoid this required consent. As rewritten, the bill makes it possible for either the state where pollution originates or an affected state downstream to approve or request federal action. And if the federal government does act, on request of a state downstream, formal notice must go to state and interstate agencies involved at the same time notice to abate goes to the pollutor.

Thus revised, the bill now seems assured of clear sailing through legislative channels. Having opposed the bill as originally written (ENR June 2, p. 180), we commend those on the Senate committee staff primarily responsible for the new draft. Also to be commended are representatives of state and interstate agencies whose efforts at committee hearings brought about the revision and, lastly, the Public Health Service for its agreement on a workable compromise it will have to administer.



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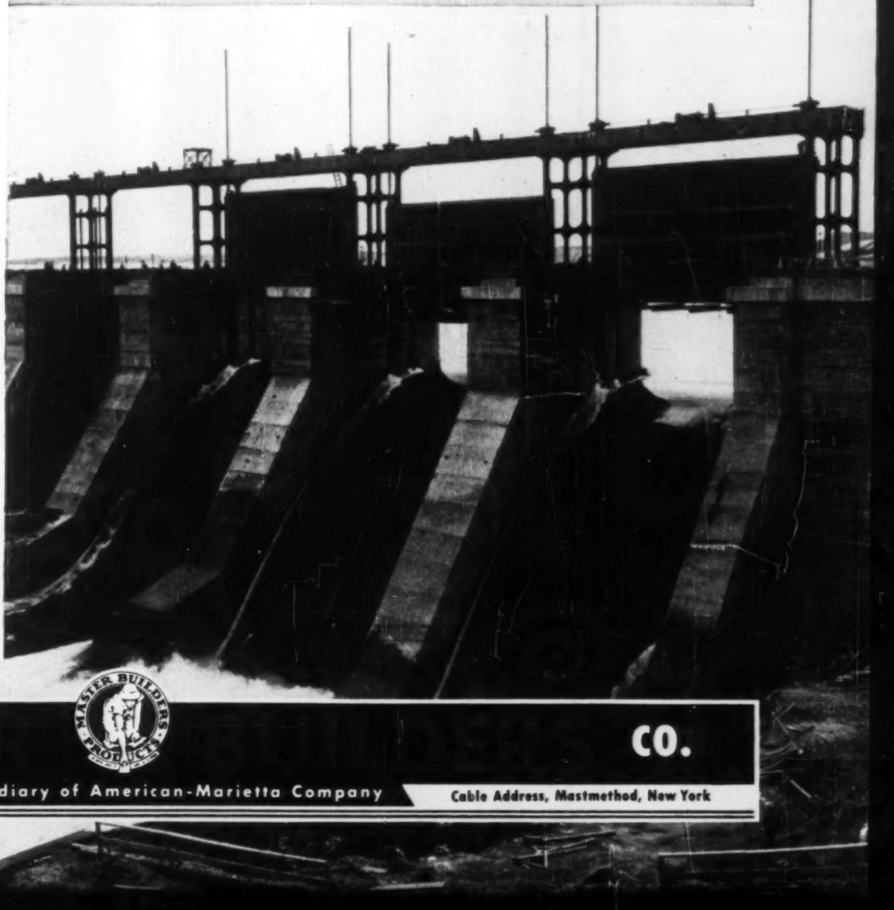
ABOVE—Peribonka No. 2 Powerhouse located at Chute a la Savane, Quebec. Owner: The Aluminum Company of Canada, Ltd.; Consltg. & Des. Engrs.: Shawinigan Engineering Co., Ltd.; Contr.: Pentagon Construction Co., Ltd. both of Montreal.

BELOW—Peribonka No. 1 Spillway located at Chute du Diable, Quebec. Owner and Engineers same as Peribonka No. 2 Powerhouse. Contr.: Fraser-Brace Engrg. Co., Ltd., Montreal.



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* Unit water content is the most important basic factor affecting concrete quality according to:

American Concrete Institute, Committee 613, 1944 Report, Page 655.

Bureau of Reclamation's current Concrete Manual, Page 130.

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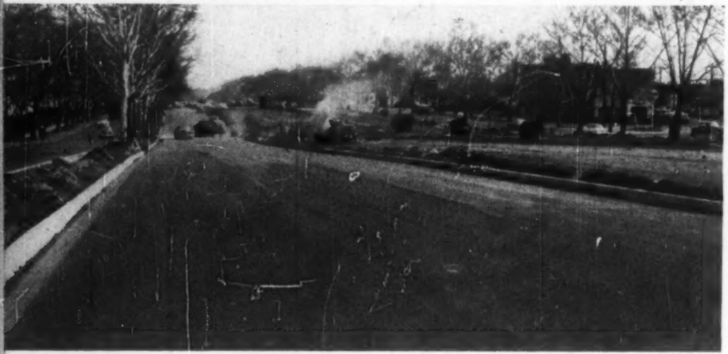

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